

COMPUTERWORLD

SPECIAL REPORT:
THE PC'S 10TH ANNIVERSARY
beginning on page 53

Users get serious about growing security risk

BY MICHAEL ALEXANDER
CW STAFF

First of a two-part series on recent developments in computer security.

Outsourcing, downsizing, concerns about protecting personal data and, most of all, emerging technology are adding up to one large security headache for the information systems security profession. However, some relief may come in the form of increased computer security awareness on the part of senior managers and more money to buy security



products, according to some security experts.

"From a security standpoint, multivendor connectivity is a nightmare," said Daniel White, partner and national director of information security at Ernst & Young in Chicago. "PC security is still an oxymoron."

Emerging technologies such as computer-aided software engineering and imaging provide various opportunities to enhance computer security because they allow for "a better understanding of what the system is supposed to be doing," but they

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ES/9000 set for fall extension

BY ROSEMARY HAMILTON
CW STAFF

After several months of disappointing mainframe sales, IBM is hoping to finish 1991 with a bang by shipping its long-awaited high-end Enterprise System/9000s and announcing new large-systems hardware and software.

Last week, company officials confirmed that deliveries of the ES/9000 Models 820 and 900 would begin next month. However, company spokesmen would not comment on an expected Enterprise Systems announcement.

Several analysts contacted last week said they expect IBM will present a major Enterprise Systems package in early September. Designed to build on the

390 generation, which was introduced last year, the announcement would include the following:

- Lower end water-cooled models with next-generation technology, also known as Summit engines.
- Higher end air-cooled ES/9000 models, including a four-way version.
- An extension to the 3390 disk drive family.
- The introduction of an enterprise data warehouse strategy and additions to its AD/Cycle.

While the Enterprise Systems announcement could renew interest in the mainframe line, the scheduled shipments of the high-end ES/9000s are expected to give IBM a more immediate and badly needed boost. Analysts are predicting that the company will ship between 200 and 400 units worldwide by

Buried treasure

Several thousand installed 3090 series mainframes create a lucrative target market for high-end Enterprise System/9000s



System series	Installed systems
3090-100	1,220
3090-200	970
3090-300	485
3090-400	630
3090-500	160
3090-600	810

Installed base as of January 1991

Source: Computer Intelligence

CW Chart: Marie Haines

year's end. Depending on discounts and system configurations, the systems could represent at least \$3 billion in revenue for IBM.

"They'd be very happy with 200 to 300 [shipments]," said Frank Gens, a vice president at Technology Investment Strategies Corp. "I feel they can meet

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Bell ruling won't unleash services flood

BY ELLIS BOOKER
CW STAFF

CHICAGO — Don't expect to see the regional Bell telephone companies racing into on-line information services tomorrow.

After years of fidgeting at the starting block of this \$9 billion marketplace, the remnants of the Bell System heard a pop, not a blast, from the starter's gun late last month.

Although U.S. District Judge Harold H. Greene lifted the ban on the regional phone companies engaging in information services in late July, he stayed that order pending a review by an appeals court [CW, July 29]. Last week, the regionals filed an appeal with Greene's court, asking that the stay be vacated.

Many observers said they think various appeals could add a

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Slipping share

AT&T's share of long-distance revenue has dropped steadily since the Bell system breakup

	1984	1985	1986	1987	1988	1989	1990
AT&T	90.1	86.3	81.9	78.6	74.6	67.5	65.0
MCI	4.5	5.5	7.6	8.8	10.3	12.1	14.2
U.S. Sprint	2.7	2.6	4.3	5.8	7.2	8.4	9.7

Market share percentage by total revenue

Source: Federal Communications Commission

CW Chart: Michael Siggins

FCC eases AT&T price rules

Decision permits more flexible business deals

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — Asserting that the big-business market is fiercely competitive and does not need government protection, the Federal Communications Commission last week voted 5-to-0 to relax regulation of AT&T's long-haul services such as Accunet and digital private lines.

In a move that may have an even bigger effect on users, the FCC also created a service category called "contract carriage," which allows users and AT&T to negotiate contracts for custom-network services in a nearly unregulated environment.

"I expect the high end of the business market to migrate aggressively to contract carriage over the next two years," said Henry D. Levine, a Washington, D.C.-based communications attorney for several financial corporations.

Levine predicted that contract carriage will end up eclipsing Tariff 12, AT&T's current vehicle for custom-network contracts, and Tariff 15, a business discount program that the FCC

Continued on page 4

Mutual's IS group routed

Execs leave as staff is slashed at seized insurer

BY CLINTON WILDER
CW STAFF

NEWARK, N.J. — Soured real estate investments may cost Mutual Benefit Life Insurance Co. its very existence, but the resulting financial debacle has already cost the firm two of its top information systems executives.

Charles McCaig, the former top IS executive recently promoted to chief administrative officer, will depart later this month to become senior vice president of information resources at insurance firm Chubb & Son, Inc. in Warren, N.J. June Drewry, who replaced McCaig as senior vice president of IS last year, will move to Aetna Life and Casualty Co. in Hartford, Conn., Sept. 3, as head of annuity, pension and mutual funds systems.

Change of plans

Both executives said they had planned to stay at Mutual Benefit until their retirements, but the firm's recent fiscal disaster changed that. The 145-year-old company was seized by New Jersey state regulators July 16 to ward off a run on its assets by

nervous policyholders.

Approximately 35% of the 400-member IS staff has already been eliminated in the drastic cost-cutting that the firm has undergone.

"It has been horrible, a real tragedy for a lot of people here," Drewry said. "Some of us just hope to move on and start a new life."

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D&B Software, Lawson Associates move software off the mainframe. Page 10.

Met Life wins \$4 million damage suit against software supplier. Page 6.

Microsoft sketches in OS/2 support limitations. Page 87.

American Airlines and BankAmerica scoop up SIM partnership awards. Page 88.

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"Personal computer security is still an oxymoron."

DANIEL WHITE
ERNST & YOUNG

On the state of data security.
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EXECUTIVE BRIEFING

■ **No more price caps and floors for AT&T.** Fierce competition in the big-business market renders moot the need for government safeguards, the Federal Communications Commission said as it voted to let AT&T go full steam ahead in services. The FCC also created a new service category — "contract carriage" — that lets AT&T and users negotiate custom network services virtually unregulated. **Page 1.**

■ **PC purchasers in 1991 can get five times the clock speed, 62 times the RAM and four times the floppy disk storage that the same dollars would have bought in 1981.** But the PC's productivity gains have not kept pace. IS managers say the smaller platforms yield efficiency increases of no more than 10%. **Page 53.**

■ **IBM is betting on the long-awaited high-end ES/9000** to lend a fourth-quarter flourish to thus-far dismal 1991. Analysts say that it looks like a smart bet. **Page 1.**

■ **Competitive advantage is harder and harder to come by, says Max Hopper.** The American Airlines IS chief who built Sabre into the archetypal system it is today — and who says he once turned down a seven-figure salary — tells all in a recent interview with *Computerworld*. **Page 65.**

■ **Outsourcing, downsizing, open systems and networking are turning computer security into an oxymoron.** But managers are getting security savvy, aided by a spate of security-enhancing technology. First in a two-part series. **Page 1.**

■ **Hospitals are hankering for fresh IS blood** to inject into their growing information systems environments. **Page 74.**

■ **Some 550 chemists pore through 10,000 technical journals to stock the American Chemical Society's (ACS) 100-plus databases.** And it takes STN International — an overland and undersea network linking Tokyo, Karlsruhe, Germany, and ACS home base Columbus, Ohio — to let scientists around the world tap in. **Page 44.**

■ **Troubled Mutual Benefit Life Insurance Co. loses its two top IS executives:** Former IS head Charles McCaig, now chief administration officer, and June Drewry, who succeeded McCaig, depart as Mutual

Benefit, broadsided by soured real estate deals, struggles to survive. **Page 1.**

■ **Donating used equipment to charity** through equipment clearinghouses is cost-effective — and easy. **Page 80.**

■ **Wordperfect Corp.'s adamant 'one license, one copy' stand** makes it hard to move the firm's best-selling wares onto networks. But networks are where more and more users want to be. Is Wordperfect's pricing policy safeguarding potential profits at the risk of losing its loyal installed base? **Page 29.**

■ **Metropolitan Life Insurance Co.'s plan to replace 1,000 minicomputers with PC-based local-area networks** was a bold one. Bolder still was the decision to put the huge conversion on hold in order to assess and address its human and corporate dynamics. **Page 45.**

■ **On site this week:** In the five years since former New York Giants security guard Jon Berger became the team's computer coordinator, he has moved the 1990 Super Bowl winners from casual use of E-mail to sophisticated DEC VAX-based scouting and coaching applications. Now he's eyeing notepad computers. **Page 33.** In Fort Smith, Ark., OK Industries, Inc. speeds some 1 million chicken patties, nuggets and tenders a week to your favorite fast-food sites. That kind of turnaround puts heavy demands on computing. **Page 25.** Bill, Brandenburg, IS head at New York-based International Flavors and Fragrances, says active involvement in user groups is well worth the effort. **Page 28.**

The 5th Wave



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Bell ruling

FROM PAGE 1

year to the legal wrangling, leaving the regionals unable to move forward.

Spokesmen for a number of the regional holding companies said last week that they had not put much time or money into developing information services, although most have developed services or projects providing access to information developed by independent companies.

"There's this perception that Bells have in a closet somewhere a list of products and services... We have never had a secret closet," said a spokesman for Denver-based US West. US West is one of the nation's seven regional Bell holding companies, which together operate 22 telephone companies.

Analysts, however, said the regional companies are obviously playing their plans close to the vest for competitive reasons so as not to enrage their critics.

"They want to keep a low

profile," said Peter Marx, president of The Marx Group in Wellesley, Mass. "If they said, 'We have a nifty capability that will replace Prodigy or Meade Data Central,' they'd have made two new enemies."

One likely area for the Bells to jump into would be network services providing small and medium-size businesses with inventory control, billing and on-line ordering services, said a Washington, D.C.-based spokeswoman for Pacific Telesis.

The regionals can also be expected to leverage what they know best — voice telephony — and so bring out audiotelex products.

Nevertheless, some analysts said the Bell companies' success is not at all guaranteed.

"What everyone forgets about is that a service that is good at the national level may not be good at a [local] level," said Thomas L.

Nolle, president of CIMI Corp. in Voorhees, N.J.

Restrictions on how they can structure their information services have already bruised the Bell companies. Some have tried and failed to make a go of "information gateway" services.

In March 1988, Greene permitted the regional holding companies to engage in "noncontent" information services. Owners of the monopoly phone

networks, the judge reasoned, could act as the railroads or gateways for advanced information services of others but should not be building the trains.

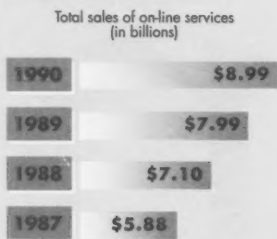
However, this restriction and the requirement that duplicate gateways be set up in each local area doomed the concept from the start, analysts and phone company officials agreed.

Gateway field trials were held by five of the seven regional holding companies. "The gateways were only popular until people had to pay for them," said Chris Elwell, an analyst at Simba Information, Inc. in Wilton, Conn.

Nevertheless, according to Elwell, the gateway trials provided valuable market research information. "The electronic yellow pages will be a significant business product, and theoretically, even E-mail will eventually have an impact," said Jeff Silverstein, publisher of Digital Information Group in Stamford, Conn., which produces newsletters and periodicals on the information industry.

Dollars on-line

Businesses account for 97% of total on-line service sales



Source: SIMBA Information, Inc. CW Chart: Michael Siggins

FCC

FROM PAGE 1

rejected in a separate decision last week.

Current Tariff 12 users may elect to keep their existing contracts or renegotiate contracts under the contract carriage rules.

AT&T must file a publicly available description of each contract-based service — including the price, minimum volume commitments, volume discounts and other terms and conditions — and the service must be generally available to other companies, the FCC said.

The FCC relaxed its regula-

tion of AT&T business services by eliminating the price caps and floors and shortening its review of new AT&T services and prices, which is good news for network managers who have complained about the regulatory delays involved in doing business with AT&T.

As a practical matter, AT&T will be able to roll out new business services and price changes after a cursory, 14-day FCC review, instead of the current 45-day review.

Perhaps more importantly, observers said, the FCC sent a signal to MCI and Sprint that it will not tolerate legal protests designed merely to delay AT&T offerings, a tactic known as

"regulatory gaming."

The streamlined regulations cover most of the services used by large businesses, but the FCC excluded analog private lines and international service on the grounds that AT&T still has substantial market power in those segments.

Easier to compete

Most business user groups supported the FCC action to cut the red tape and make it easier for AT&T to compete with its major rivals, MCI Communications Corp. and U.S. Sprint Communications Co.

Raymond A. Beavan, manager of network services at LTV Steel Co. in Cleveland, said regu-

latory constraints on AT&T were needed until the competitors "got their feet on the ground," but now there should be a more level playing field.

List of concerns

Although users generally supported the FCC action, they expressed concerns in three areas:

- The FCC decided that AT&T 800 service cannot be bundled with the deregulated services until 800-number portability is achieved, in 18 months. "It's a major problem, but it's just an 18-month problem. Thank goodness they at least grandfathered the [bundled] deals that existed," Levine said.

- Users are pleased by the demise of price floors for AT&T business services but are worried that the FCC has eliminated the protection offered by the price ceilings, said Brian R. Moir, counsel to the International Communications Association.
- Some users, such as Kenneth L. Phillips, telecommunications strategist at Citicorp in New York, opposed the deregulatory moves because they said they fear AT&T will engage in predatory pricing that could drive smaller carriers out of business.

CORRECTION

In "PC-based support tool helps decision makers" [CW, July 22], the comments skeptical of Dalton Dialogic, Inc.'s "stand-alone" approach to its Decision/Decisions software package should have been attributed to consultant Doug Neal, vice president of Decision Resources Corp., and not to user Jim Barnes, editor of *Canadian Machinery & Metalworking*.

DG extends Avion line, adds 4600 RISC server

BY SALLY CUSACK
CW STAFF

WESTBORO, Mass. — Data General Corp. expanded its Avion line of Unix-based workstations and servers across the board last week with products for high-end, low-end and mid-range users.

Leading the announcement of 33-MHz Motorola, Inc. 88100-based systems was the Avion 4600 reduced instruction set computing (RISC) server.

Priced from \$19,995, the machine was developed under the code name Rolling Rock. It offers between 39 million and 78 million instructions per second performance.

DG also unveiled the Avion

530 RISC workstation, priced at \$13,500, and the high-performance Avion 5225/6225 RISC server, priced at \$43,500.

The 5225/6225 can accommodate 414 users and is positioned for larger database applications, the company said.

Performance boost

All of the new machines feature single- and dual-processor configurations and support DG/UX 5.4, an upgrade of DG's Unix operating system that provides for symmetric multiprocessing capabilities. "I find it significant DG took steps to increase the I/O performance and memory performance of the system — it allows the machine to function in the real world," said Tom La-

Marche, information systems manager at the Flood Control District of Maricopa County in Phoenix.

The Flood Control District has been using the Avion platform since its introduction in 1988; the shop currently uses 21 workstations and one server.

Agreement signed

DG also announced that it has signed a licensing agreement with Unix System Laboratories to offer the Tuxedo System Transaction Manager Release 4.2 and its workstation extension on the Avion line.

Known as System/T, the transaction manager software product will provide a framework for building on-line transaction processing applications in the Unix V operating system environment.

DG has also dropped the price on the Avion 4100 entry-level RISC server by more than 50%, from \$21,390 to \$9,995.

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Midwest

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Main Editorial Office

Box 9171, 375 Cochituate Road

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NEWS SHORTS

Boole adds DB2 packages

Boole & Babbage, Inc. announced last week a set of integrated tools for IBM's DB2 database management system. RXD2 includes tools for catalog management, security administration, SQL test facilities, DB2 object maintenance and applications prototyping. In addition, the RXD2/Link facility provides an interface to DB2 from IBM's Rexx language. This would allow customers to build their own Rexx-based tools. The company said it plans to begin shipping the tool set next week. Pricing starts at \$30,000, depending on configuration.

DEC will share graphics info

Digital Equipment Corp. announced last week it will license its own two-dimensional graphics illustrations editing technology to applications developers for DEC's reduced instruction set computing line as a library of software routines known as Map Kernel. The map-sketching technology, which mimics traditional pencil and eraser graphic arts techniques, enables graphic objects to be created as multicolored, multicolored shapes or planar maps.

CGI plans interface builder

Computer-aided software engineering (CASE) tool maker CGI Systems, Inc. is slated to announce this week a product for adding graphical user interfaces to existing mainframe applications. CGI's new Pachase Automatic Windowing Facility is the first step in a series of CASE tools for building client/server applications, the company said. It is available immediately, with prices ranging from \$30,000 to \$80,000.

Idea gets financing

Communications processing company Idea — which includes Ideassociates, Inc., Idea Courier, Inc. and Idea Servcom — has announced second-quarter 1991 financials. The Billerica, Mass.-based firm reported revenue of \$46.1 million for the quarter ended June 30 and \$90.7 million for the first half of 1991 — respective increases of 10.2% and 7.8% from the same periods last year, the company said. Net income for the second quarter was \$1.7 million and \$2.5 million for the six-month period ended June 30. The firm also said it has secured a \$60 million round of financing from Chemical Bank, Shawmut Bank, Hancock Venture Capital, Hambro International Venture Fund, The Palmer Organization and The Sprout Group.

IBM, AT&T deal on T3 link

IBM and AT&T Paradyne announced last week that they will jointly enhance IBM's 3172 Interconnect Controller to extend IBM's Enterprise System Connection (Escon) architecture over T3 links, enabling IBM System/390 hosts to communicate with remote IBM peripherals at speeds of up to 45M bit/sec. The product will be marketed by AT&T Paradyne and is expected to be out next year. The agreement is separate from IBM's intentions, announced last September, to enhance the 3172 Model 2 so it can support Escon-based, T3 connections among IBM System/390 hosts, an IBM spokesman said. That work should bear fruit in the next 18 months, he added.

Windows-based manager for Vines

A Microsoft Corp. Windows-based network management system for Banyan Systems, Inc. Virtual Networking Software (Vines) networks has started shipping this week from Trellis, a Hopkinton, Mass., network integrator and software developer. Dubbed Expose, the product was made known to Trellis resellers last spring but was not publicly announced, said Trellis principal Chip deVillafranca. Several Vines users have been involved in the product's development from the early stages, deVillafranca said. Banyan offers its own M-Net network manager that reportedly takes "snapshots" of the network at any point in time but, unlike Expose, does not record data, graph it and set alarms. Expose allows users to define parameters for critical network levels and to be warned before a crash and a phone call from an angry user, deVillafranca said.

More news shorts on page 88

Met Life wins \$4 M vendor contract suit

BY SALLY CUSACK
CW STAFF

NEW YORK — A long-fought courtroom battle between Metropolitan Life Insurance Co. and software developer Noble Lowndes International, Inc. ended last week after a New York state jury awarded the insurance giant almost \$4 million in damages.

The suit, which originated from a 1984 contract dispute between the two parties, involved a customized software system designed to process individual and group health insurance claims. Under the terms of the contract, Noble Lowndes agreed to modify its existing package, Aces, to meet Metropolitan Life's unique processing requirements.

About a year into the project, the New York-based software developer claimed it had already spent most of the ceiling price, set at \$392,000, and refused to complete the project unless Metropolitan Life agreed to pay more. It refused.

Metropolitan Life Vice President Bruce Goodman said problems started with late deliveries and went downhill from there. The company was stuck with a system it could not use, he said, and was forced to develop its own software system internally, which took two years.

"[Noble Lowndes] could not

deliver anything that worked and tried to get more money out of Met Life by saying that the changes we wanted were not in the contract," said Anthony D'Amore, associate general counsel for the insurer.

Pointing out that it is extremely rare for a major corporation to sue for that amount of money — a five-year fight is expensive and involves substantial attorneys' fees — D'Amore said the insurer was extremely pleased with the verdict.



D'Amore pleased with verdict

In order to recover damages, Metropolitan Life had to show malice and bad faith as well as intent and willful repudiation of the agreement on the part of the software vendor.

The jury awarded Metropolitan Life \$3,961,000 to cover personnel, computer and other costs.

Noble Lowndes declined to comment on the verdict.

Mutual IS

FROM PAGE 1

McCaig, a 25-year veteran executive widely credited with leading Mutual Benefit's successful re-engineering of its policy applications process, echoed Drewry's sentiments.

"Maybe looking back, this will all seem like more of a silver lining than a cloud," he said. "I think that's true of my own case, and I hope it will be true of others."

At Chubb, McCaig will fill an open position and report to David Fowler, senior vice president and managing director. Chubb "needs a strong person to come in, and McCaig is an excellent choice," said James B. Webber, president of Omicron, a Mountain Lakes, N.J.-based IS research and consulting consortium that has worked with Mutual Benefit for many years.

McCaig said Chubb's IS is not a "come in and fix it type of situation. They have a real strong team in place."

Robert Lingeman, Mutual Benefit's second vice president of individual insurance systems, will head the IS group on an interim basis while state regulators try to resolve the company's fiscal crisis, possibly by selling it to another insurer.

"MAYBE LOOKING back, this will all seem like more of a silver lining than a cloud."

CHARLES MCCAIG
MUTUAL BENEFIT LIFE

Metropolitan Life Insurance Co. and Prudential Insurance Company of America have been brought in to back any new Mutual Benefit policies with their assets.

All IS initiatives "are in a holding pattern while the state tries to figure it out," according

to McCaig.

Drewry, a 12-year veteran of Mutual Benefit, will join a major IS restructuring effort at Aetna [CW, July 1]. She said the situation "has been a real education. You learn what really makes a company tick, and you learn how much you didn't know."

Drewry's work in re-engineering at Mutual Benefit earned her a co-nomination for the annual Society for Information Management's Partners in Leadership Awards, announced last week (see story page 88).

Although Mutual Benefit did not win the national award, it did win the first regional award from the New Jersey SIM chapter earlier this year.

Mutual Benefit's high profile in the IS community was also carried by former Chief Executive Officer Henry E. Kates, keynote speaker at the SIM annual conference last fall in New York. Kates, one of the executives being held responsible for the disastrous real estate deals, resigned last month at the behest of state regulators.

Saykally resigns Unify's CEO position

BY JEAN S. BOZMAN
CW STAFF

SACRAMENTO, Calif. — Unify Corp. Chief Executive Officer David Saykally has resigned, the firm said last week. No reason was given for the departure of Saykally, who had come to the \$40 million software firm in June 1987 to revive the business.

During the search for a new CEO, Unify co-founder Nicolas Nierenberg, chairman of the board and vice president of engineering, will act as president and

CEO. Kirkwood Bowman, general partner of the venture capital firm Inman & Bowman and a Unify director since 1986, became acting chairman. Inman & Bowman is the largest single shareholder in Unify.

A concern that marketing may have overshadowed engineering and product development led to Saykally's departure, company executives said. "[Saykally] turned the company around financially, and he did a wonderful job of taking it in a new direction — the fourth-gen-

eration language and tools area," Bowman said. "But there have been some strains in the company, and some people thought that the marketing side was getting ahead of the other side of the house."

Saykally, 44, who had been president of Sterling Software, Inc.'s Answer Systems Division, presided over a shift in Unify's product strategy, de-emphasizing the Unify relational database engine in favor of a new generation of portable database development tools, Accell/SQL.

NCR, AT&T combine units

BY ELLIS BOOKER
CW STAFF

DAYTON, Ohio — NCR Corp. and AT&T Computer Systems said last week they would combine their respective organizations that sell computer gear to telephone companies and AT&T.

The merger of the two units is among the first of many in advance of the definitive acquisition of NCR by AT&T, expected later this year.

Earlier last month, AT&T said NCR is expected to recruit many of the 3,900 U.S. managers in AT&T's computer group. Of the 3,000 nonmanagement employees at AT&T Computer Systems, NCR will recruit about 600, and AT&T will retain an equal number to manage Computer Systems gear now inside AT&T.

AT&T Vice President William J. Patchett has been chosen to head the new Telecommunications Division.

The total market for computer sales in the telephone company arena is \$2 billion annually, estimated Patchett, who has been data sales vice president at AT&T Computer Systems and Network Systems since last year. He would not, however, disclose either AT&T's or NCR's share of this market.

Noting the deep penetration of the AT&T 3B2 minicomputer line at telephone companies, Patchett said this line would continue to be sold.

"Frankly, the applications running on that installed base will be attractive for years to come," he said. The 3B2 is typically used for operational support and network management in these settings, he added.

However, new applications such as on-line databases for phone company subscribers will likely gravitate to the NCR System 3000 platform, he said.

The Telecommunications Division, part of NCR's United States Group, will be added to three existing vertical market units at NCR. Those other units are retail, financial and commercial/industrial/medical/education/government.

In advance of the NCR acquisition, AT&T earlier this year restricted most outside hiring and promotions at Computer Systems. AT&T has a total work force of 272,700 people.

Severance packages will be available for workers who cannot be placed at NCR or elsewhere within AT&T. Depending on years of service, managers can receive up to 32 weeks of pay; nonmanagement employees will get up to 104 weeks of pay.

AT&T also said that it is reviewing the status of another 1,800 nonmanagement employees, the majority of whom are in manufacturing, distribution and repair operations in Little Rock, Ark., and Memphis.

In separate news last week, NCR announced an alliance, valued at \$10 million over the next two years, with Pacific Access Computers, a systems integrator specializing in products and services for the Bell operating companies.

Pacific Access, based in Sacramento, Calif., will develop solutions for the NCR System 3000 family, NCR said.

Oracle software settles onto NCR 3600 platform

BY JEAN S. BOZMAN
CW STAFF

Oracle Corp. may have found the most comfortable place yet for its Oracle 6.2 "parallel server" software to run: the NCR 3600, a new high-end transaction-processing computer that will coordinate the communication of messages between multiple copies of Oracle.

Last week, Oracle and NCR announced a joint development agreement that would port the Oracle 6.2 relational database software to the NCR 3600 platform, which is based on multiple Intel Corp. i486 microprocessors.

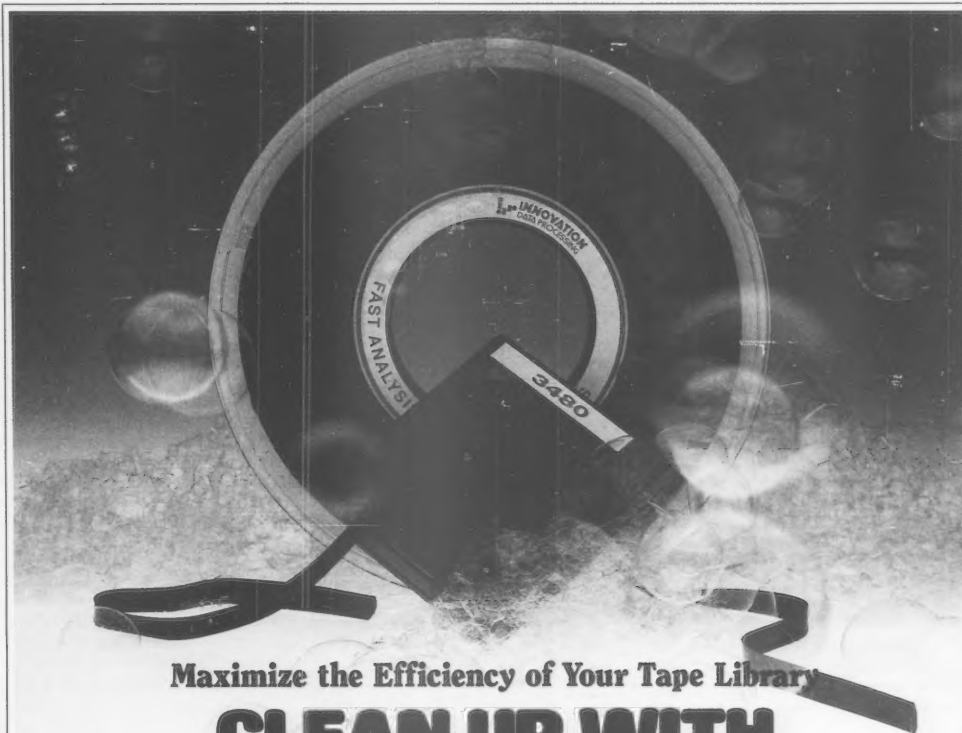
The NCR 3600, built on multiple 320 million instructions per second "nodes," is to be installed at customer sites starting this fall, while the Oracle 6.2 software that runs on it is scheduled to ship in the first quarter of 1992. Oracle 6.0 already runs on other NCR Series 3000 computers, according to Oracle; the price of the Oracle 6.2 software for the NCR 3600 will be based on the number of users logged on to the system.

Oracle and NCR have been working for more than two years to develop a "portable" or distributed lock manager that would handle the messages that must be passed between multiple copies of Oracle

running on the same machine.

The joint development agreement between NCR and Oracle was almost inevitable because both firms are eyeing the same market, said Rikki Kirzner, a senior industry analyst at Dataquest, Inc.

"The NCR 3000 series is NCR's star product, and it's all based on Unix 5.4," Kirzner said. "Oracle has shown that its products are able to handle large volumes of data on Unix machines." But, she said, NCR will probably move to include other related products for its NCR 3600 line: "This agreement with Oracle is only the first. NCR will go to all the rest of the database companies in succession."



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ES/9000

FROM PAGE 1

that," he added.

Gens and other analysts said they expect the shipments to pull IBM out of the large-systems doldrums that were, to a great extent, caused by disinterest in the so-called ES/9000 hybrid models.

The hybrids, which have been available since late last year, are lower end, water-cooled systems that use the new-generation ES/9000 frame and power supply but are based on the older 3090 J model engine.

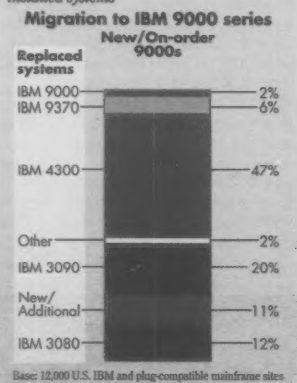
Sales fell short

Last week, Nicholas Donofrio, IBM's Data Systems Division president, confirmed that sales of these models have been less than stellar, noting that "this transition product line became a problem."

Analysts have long maintained that customers found

Moving up

The range of the Enterprise System/9000 line is drawing migration interest from users across the broad span of older installed systems



these hybrid models unappealing.

"Lots of things went on,"

Donofrio said of the hybrid sales. "It was clear early this year that it was the economy and world events," he said. "Then it started to shift in the second quarter. This transition line became a problem. Customers were pausing to see which was the best move for them."

"When we get these things shipping, it will start to right itself," he said of the high-end units.

Donofrio would not comment on an expected introduction of Summit-based, smaller, water-cooled models.

Analysts said IBM is determined to present next month's announcement as an Enterprise Systems offering and, as such, will play up other pieces beyond the new hardware devices.

This should include the introduction of the enterprise data warehouse, which is a plan to provide users with access to data throughout a corporation without regard to its format or operating environment (see story page 23).

Strategic initiative

Several consultants said IBM will position this as a strategy, much like its other grand-scale Systems Application Architecture initiatives.

Like AD/Cycle and Systemview before it, the enterprise

data warehouse will include third-party participation.

Last week, observers speculated on a number of database companies as possible participants. However, the most consistently named player was Information Builders, Inc.

An Information Builders spokesman contacted last week said he could not respond to an inquiry about IBM's enterprise data warehouse.

However, he did note that a new division was formed at the company called the Enterprise Data Access Division.

IBM vows more 'open' AS/400 as sales surge

BY MARYFRAN JOHNSON
CW STAFF

IBM's newest generation of Application System/400s rolled out the door at a clip of 9,000 D models shipped in the first five weeks — doubling the pace set by the first wave of AS/400s in 1988, IBM Vice President Robert LaBant said last week.

In an interview with *Computerworld*, LaBant said his customers should expect a continuing expansion of the AS/400 on both the low and high ends of the line, with a growing emphasis on "openness" through industry-standard networking connections and application development languages such as C++.

"A key part of our strategy is to make the AS/400 easy to use and easy to buy — almost a shrink-wrap kind of approach," the IBM executive said.

LaBant confirmed the early September debut of a new low-

end AS/400 D2 model, which analysts said they believe will be priced at less than \$15,000 and compete handily with local-area network servers. This miniature AS/400 should also be an attractive box for multiple sales to large corporations with remote offices — a key goal for increasing IBM's current 15% mid-range market share worldwide.

"Having those smaller AS/400s definitely has appeal for us, for our distributors or our suppliers," said Richard Kolbe, information systems director at Harley Davidson, Inc. in Milwaukee, which has four D models on order now. "What customers like us really want from IBM is expanding the breadth of the line and adding to operating system functionality."

Moving merrily along

At the top of the line, the mainframe-class AS/400 D80s have been selling briskly, LaBant said, to companies such as Royal Caribbean Cruise Lines, The Sands Hotel & Casino Corp. and Tiffany & Co.

"We've seen a tremendous improvement in performance with the D80, particularly in the batch cycle at night," said Eric Corbman, director of technical planning at Tiffany's data center in Parsippany, N.J. "We had a crying need for performance improvements, and the jump on this particular model has been much bigger than prior upgrades such as the B60 to the B70."

Kirkland, Wash.-based Costco Wholesale Corp., a warehouse retailer with 72 locations nationwide, was busy last week installing a D80 and upgrading a B70 to a D80. Although IBM estimated that the average D80 upgrade should take less than 12 hours, Costco ran into software glitches that kept the B70 system down for 24 hours.

"That was painful for us because we run our computer systems 24 hours a day, all year round," said Jerry Burton, technical support manager at Costco.

Model 900 surpasses hopes

At a press briefing last week, IBM presented Principal Financial Group as the first ES/9000 Model 900 user.

Robert Delaney, vice president of information systems, said the 900 is now handling all of the company's on-line operations, which had previously been handled by an ES/9000 Model 720 and half of a 3090 Model 600J.

He said the system reduced internal response time from four-tenths of a second to three-tenths of a second, while end users are reporting response times of fewer than three seconds 94% of the time. "Our experience is it is everything we had hoped for," Delaney said.

IBM also released new data that showed the

models outperformed their original estimates.

While the company said the new models would perform at rates of 1.7 to 1.9 times that of a comparable 3090 J model in commercial processing, they now show improvements of between 2% and 2.2%.

"An 11% increase in performance is not trivial," said James Cassell, a vice president at Gartner Group, Inc.

Dave Moore, a vice president at Mellon Bank Corp., said he was impressed with the new numbers. "I'm not surprised, but I am pleased," he said. "They have some now in the field, so these numbers are based on real work loads; 10% to 15% is exciting. God knows I need it."

ROSEMARY HAMILTON

IBM restructuring aims for more nimble decision-making

BY NELL MARGOLIS
CW STAFF

ARMONK, N.Y. — IBM last week flattened its top-level reporting structure, slicing a layer from the firm's highest decision-making process to sculpt a nimbler, more responsive company.

The move places each of the firm's major business lines under the stewardship of a member of the powerful five-man Management Committee — one executive layer closer to the action than the divisions used to be.

Where it leaves Senior Vice President Terry R. Lautenbach is less clear. Some analysts said they see the realignment as positive for Lautenbach, one of several speculated heirs apparent to Chairman John F. Akers. Lautenbach was appointed to the Management Committee, placing him on a peer level with President Jack Kuehler, to whom he

formerly reported.

Others, however, noted that the reporting changes leave Lautenbach with a higher rank but less turf: the company's two most promising growth divisions — the Personal Systems and Applications Business Systems (principally, the Application System/400) business lines — now report directly to Kuehler.

An IBM spokesman denied any promotions or demotions inherent in the realignment.

Divided we stand

Prudential Bache Research analyst Rick Martin saw the realignment as the first step in the splitting of IBM into, essentially, two firms under one banner. "This is probably a lot bigger than it [initially] looks," he said.

Under the new order, Vice President James A. Cannavino, general manager of personal systems, and Vice President Robert

J. LaBant, general manager of applications business systems, now report directly to Kuehler. Before last week, Cannavino and LaBant reported to Lautenbach, who reported to Kuehler, who becomes the contact executive for both business lines.

"IBM appears to have just made a major split into two distinct businesses: its traditional, high-end core products, which are still bringing in big money but have a limited growth picture, and the super-high-growth desktop operations," Martin said.

"Contact executive," said spokesman Rob Wilson, is an already established IBM title. Those who bear it — Senior Vice President Frank Metz in finance and Senior Vice President Michael Armstrong in world trade, for example — are charged with vetting their business's issues for the Manage-

ment committee, often helping resolve them before they reach committee level. On occasion, Wilson said, contact executives can act in lieu of the committee.

Lautenbach is the new contact executive for the IBM U.S. worldwide manufacturing and development operations as well as the Enterprise Systems, Networking Systems, Programming Systems and Technology Products business lines.

While all such divisions reported to Lautenbach prior to last week, this is not business as usual but business with a twist: Lautenbach, now a Management Committee member, can represent his constituent businesses directly to the decision-making body instead of through the intermediary offices of Kuehler.

Martin said he sees last week's realignment as enabling IBM to run the 'two distinct businesses' in different ways.

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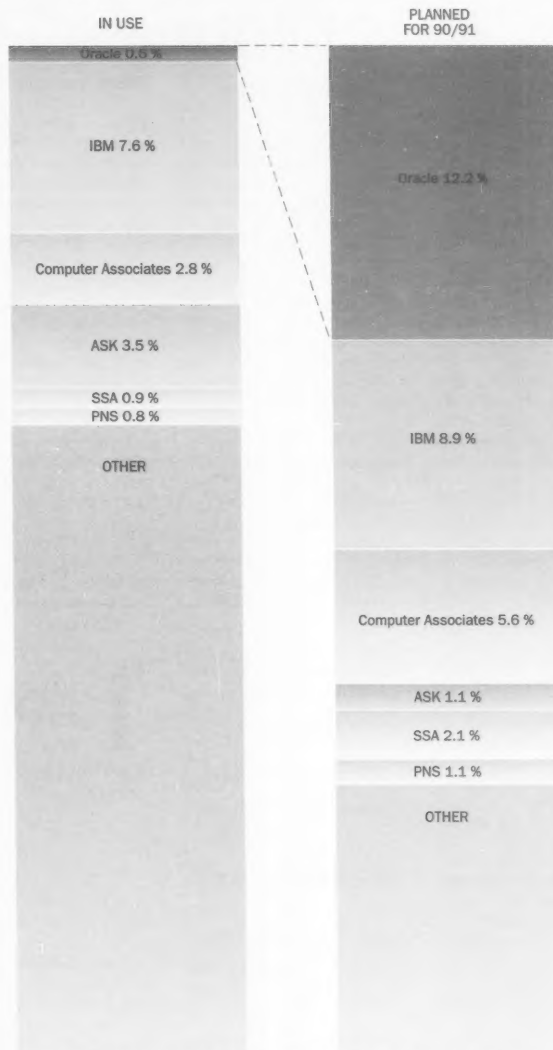
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Vendor coaxes users to Unix

Lawson's IBM and Unisys mainframe customers offered free migration

BY MARYFRAN JOHNSON
CW STAFF

MINNEAPOLIS — In a move that highlights the growing attraction of Unix-based software for traditional business environments, Lawson Associates, Inc. announced last week an unusual "downsizing" plan to migrate its IBM and Unisys Corp. mainframe customers to its suite of Unix products.

Lawson, also a prominent vendor of software for IBM Application System/400s and System/38s, is offering its high-end Unisys and IBM mainframe clients a free ride to five different Unix platforms. The company is also ceasing any further enhancements to its Universe suite of mainframe applications development and customization tools.

"We are already seeing a lot of migration activity in the Unisys world," said Dan Metzger, marketing director at Lawson. "The downsizing phenomenon is live and real."

The theory at work

Robbins Manufacturing Co. in Tampa, Fla., took advantage of Lawson's downsizing offer and is now in the midst of moving from a Unisys A5 mainframe to Hewlett-Packard Co.'s Unix-based HP 9000 Model 832.

"As conversions go, this has gone pretty smoothly," said Bill Long, vice president and controller at Robbins, which manufactures pressure-treated lumber and utility poles. "We're

finding that we get the same kind of support from Lawson on their Unix products that we were accustomed to on the A series."

Long said lower maintenance costs, cheaper hardware and increased performance of Unix-based machines present "a very attractive option" for lower end mainframes such as the Unisys A5 or the IBM 4381. "The cost savings are so substantial, it just doesn't make sense not to do the conversion," he said.

Unix surprise

Mainframe applications accounted for only 20% of Lawson's \$32 million in revenue last year. The company was astonished when its Unix applications, introduced last year, sold \$2 million worth, despite a lack of advertising and marketing attention, Metzger said.

An additional surprise was that "our average deal was larger on Unix boxes than proprietary ones," he added.

So Lawson created an "open licensing policy" offering free installation and user retraining to encourage mainframe customers to move to a variety of Unix platforms: IBM's AIX, HP's HP-UX, Digital Equipment Corp.'s Ultrix, Sequent Computer Systems, Inc.'s Dynix and Unisys' USystem V Release 3.2.

Last week, Lawson announced that its accounting system is now available on HP's 9000 Series 800 systems.

"It is a smart strategy to downsize users with a free soft-

ware path, and it's rather unique in the industry," said William McNee, an analyst at Gartner Group, Inc. in Stamford, Conn. "Lawson has probably a 12-month window of opportunity as the only player in the AS/400 market that has really migrated to Unix for midsize companies."

Lawson's primary customers are companies with \$20 million to \$1 billion in revenue.

By 1995, Metzger said, the

company hopes to nearly triple its size, becoming a \$100 million company with 40% of its sales in Unix software. The other 60% will remain anchored in the proprietary world of AS/400 and System/38 systems, where Lawson has 1,500 clients with 7,000 packages installed.

Questions remain

Still, industry analysts expressed doubts that a fledgling Unix strategy can boost Lawson's revenue that much in the next four years, even though its primary competitors in the IBM midrange — Software 2000 and J. D. Edwards, Inc. — have no

announced Unix direction.

Lawson, which expects revenue of \$46 million this year, is already running into Oracle Corp. as a competitor in the Unix market, Metzger said.

Within the next few years, analysts said, Lawson will be slugging it out in a highly competitive marketplace as larger applications vendors such as Computer Associates International, Inc. and Dun & Bradstreet Software get their Unix strategies airborne.

CA, for example, is in the process of porting several applications to HP-UX, although no products have yet appeared.

D&B deal means client/server sooner

BY SALLY CUSACK
CW STAFF

FRAMINGHAM, Mass. — Dun & Bradstreet Software last week signed an agreement with Powersoft Corp. that is worth more than \$20 million and that moves the company closer to delivering its promised client/server software.

The partnership allows D&B Software to use Powersoft's Powerbuilder tool kit to hasten development of Microsoft Corp. Windows-based client/server products for personal computers.

Supports assurances

D&B Software had previously assured users that the first component of its client/server strategy will be available by the end of this year. The bulk of D&B Software's 15,000 customers worldwide operate in IBM VSAM and

IMS environments.

The client/server products will allow users to incrementally move applications from the mainframe onto the PC, where the applications can then be accessed via relational methodologies, according to Robert Cameron, director of D&B Software's client/server business directions.

According to Cameron, while most of the installed base is comfortable with the VSAM environment, new customers have indicated that they are looking toward relational applications in the future.

Powerbuilder was designed with corporate information systems in mind, said Mitchell Kertzman, president and chief executive officer of Burlington, Mass.-based Powersoft.

The tools aid in "industrial-strength, on-line transaction processing applications develop-

ment" and are aimed at the Cobol/CICS programmer, Kertzman explained.

The tool set substantially reduced the lines of code required to build applications and fully integrates with high-performance, relational databases distributed on local-area networks.

Applications included

Stuart Woodring, a director of software services research at Forrester Research, Inc. in Cambridge, Mass., said D&B Software will also be delivering client/server applications bundled with the Powersoft tool.

"This has real value to the customers, as it allows them to customize applications with the same tools used in the actual development process," Woodring said.

According to Kertzman, the value of the contract exceeds \$20 million.

Security risk

FROM PAGE 1

are not without risks, said Wally Pugh, an electronic data processing auditing consultant at Price Waterhouse.

Installing software, networks and other computer-related technology may have created security loopholes that can be exploited by insiders and outsiders alike. Pugh is co-project partner on the Systems Auditability and Control Report, a newly published report on automated systems management for the Institute of Internal Auditors Research Foundation in Orlando, Fla.

"There is an increased awareness [on the part of managers] of the importance of information to business, even outside security industry circles," said Robert Ferrante, director of data security and systems development at American Express Travel Related Services Co.

Also, mounting concerns about consumer privacy and the protection of personal information and general media coverage of security-related issues have been a "big impetus" in boosting security awareness, he said.

With increased security awareness among senior managers comes bigger budgets to beef up security with biometric devices, encryption systems and other products, according to Market Intelligence Research Corp. The Mountain View, Calif.-based market research firm calculates that the network security market will grow to \$758 million by 1994 (see chart).

The major computer vendors are offering more security options, and their sales activities are heightening security-mindedness, said Don Hughey, senior vice president at Total Assets Protection, Inc., an international security consulting firm based in Arlington, Texas. "The major accounting firms are more criti-

Security-conscious

Security threats are expected to keep revenue for network security products climbing

Year	Revenue (in millions)	Growth rate
1990	\$362.1	17.6%
1991	\$433.7	19.7%
1992	\$525.5	21.2%
1993	\$637.6	21.3%
1994	\$758.0	18.9%

Source: Market Intelligence Research Corp.

cal in their audits for laxity of security."

Perhaps the most compelling reason senior-level managers are paying closer attention to security may be that they are more attuned to the possible legal liabilities that may arise from inadequate security, Hughey said.

Outsourcing, a recent trend, brings with it new security and legal challenges, said George S. Cole, an attorney at Hagelshaw & Cole in San Francisco. Just who has responsibility for the liability that may arise from a se-

THE FIRST LINE of defense is that you are doing something about security, not necessarily that you have it solved. Ignoring the thing, hoping it will go away, will crucify you."

GEORGE S. COLE
HAGELSHAW & COLE

curity breach should be a provision in every contract, according to Cole.

Standards for what is considered adequate security are still being developed, but it is critical that a company be able to demonstrate that it is attempting to establish security procedures, Cole said. "The first line of defense [against a liability lawsuit] is that you are doing something about security, not necessarily that you have it solved," Cole added. "Ignoring the thing, hoping it will go away, will crucify you."

The American Software Association (ASA), a division of Adapso, is mulling over preparing security guidelines for corpo-

rations as a follow-up to the National Research Council's "Computers at Risk" report. The so-called Generally Accepted Security Systems Principals would attempt to offer "reasonable security" guidelines at a time when networks and concerns about privacy are on the upswing, said Douglas Jerger, vice president of the ASA in Arlington, Va.

"Security awareness is not what it should be," Jerger said. "The tendency seems to be not to talk about it loudly, to say whether you are secure or not or admit if you have had a failing."

Next week: A look at the changes under way in the IS security profession.



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Sequoia claims tripled performance

BY MARYFRAN JOHNSON
CW STAFF

MARLBORO, Mass. — Sequoia Systems, Inc. is scheduled to unveil today its new high-end Series 400 system, the first Unix-based fault-tolerant computer to run Oracle Corp.'s Parallel Server Database Version 6.2.

At nearly triple the performance of the Sequoia Series 300, the Series 400 is based on Motorola, Inc.'s 68040 microprocessor and scales up to 32 processors from the previous maximum of 16. Up to 500 transactions per second are possible

with the Series 400, which is aimed at large on-line transaction processing (OLTP) applications with multiple users.

Available now, the system costs less than \$500,000 and is field-upgradable with a board swap to replace the CPU.

"It's a very hot machine," said Robert Kidd, an analyst at Dataquest, Inc. in San Jose, Calif. "Having Oracle on there will allow Sequoia to reach new markets, especially through Oracle's value-added resellers."

Also significant is the narrowing price gap between Sequoia machines and non-fault-tolerant competitors such as Pyra-

mid Technology Corp. and Sequent Computer Systems, Inc., Kidd said.

"The fact that Sequoia has a 15% premium over nonfault-tolerant OLTP makes it difficult for the Pyramids and Sequents of the world," he noted.

Last week, Sequoia released year-end financial results showing a 30% increase in revenue, from \$48 million to \$63 million, and a 58% jump in net income.

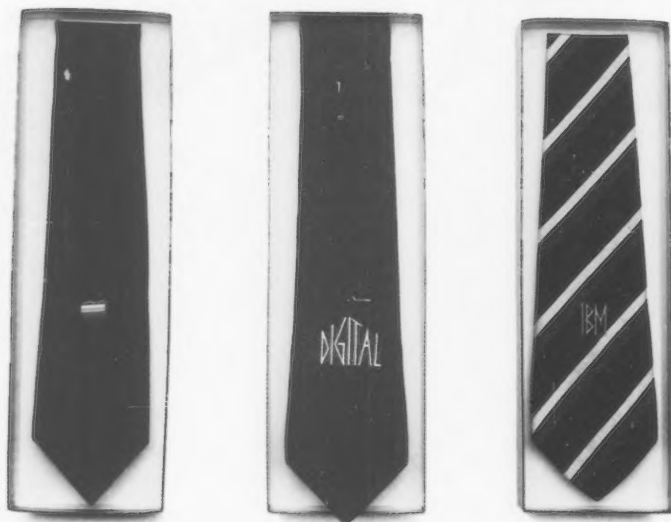
The company's partnerships with The Ultimate Corp. and Hewlett-Packard Co. accounted for roughly \$38 million in business, Sequoia President Gabriel Fusco said.

Sequoia is juggling a convoluted set of partnerships these days, including relationships with HP, Ultimate, Samsung Electronics, Computer Consoles, Inc. and Sumitomo Electric Industries. Later this year, Sequoia and Samsung will the Series 40, a low-end, fault-tolerant Unix machine priced at about \$150,000.

By late 1993, Sequoia plans to challenge the top end of the fault-tolerant market now dominated by Stratus Computer, Inc. and Tandem Computers, Inc. with the Series 1000. Company officials confirmed last week that along with equity partner HP, they will produce a new architecture in the Series 1000 based on HP's HPPA reduced instruction set computing (RISC) processor.

This mainframe-class processor, performing at 500 million to 1 billion instructions per second, will feature RISC processors from Mips Computer Systems, Inc. and Sun Microsystems, Inc.'s Scalable Processor Architecture so customers can choose their RISC architecture.

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IBM voice tool goes desktop

BY MICHAEL FITZGERALD
CW STAFF

IBM's Callpath voice processing system is migrating to the desktop, the company announced last week.

IBM will begin shipping Callpath Directtalk/2 for the Personal System/2 Aug. 16 and Callpath Directtalk/6000 for the RISC System/6000 on Oct. 25.

Thomas Nolle, president of CIMI Corp. in Voorhees, N.J., said IBM has moved the product out on the low end because it had exhausted opportunities among its high-end customers and recognized there is a significant market for automated call processing on the desktop.

"I think what IBM sees with this is [that] people are coming to realize that call centers — whether being used to support selling activities or something like that — represent a tremendous opportunity for a company to differentiate itself," Nolle said.

IBM officials said they believe the near-term market for such products can be estimated conservatively at \$400 million to \$1 billion, with ancillary markets offering as much as 10 times this potential. Currently, the market for desktop-based voice processing systems is splintered among a number of small players.

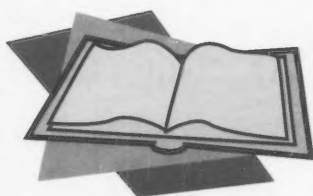
IBM will use boards from Dialogic Corp., based in Parsippany, N.J., for the PS/2 and its own boards in the RS/6000. Dialogic's boards will allow limited voice recognition for callers with rotary phones. IBM said it was working to develop similar boards for the RS/6000.

Dialogic makes boards for a number of the companies involved in the voice-processing market, and a spokesman said IBM's presence could greatly expand international demand for products and would "legitimize" the desktop market.

Directtalk/2 is aimed at companies with four to 16 users, while the RS/6000 version is designed for 12 to 72 users. Pricing ranges from \$23,450 to \$49,200 for Directtalk/2 and \$41,000 to \$149,360 for Directtalk/6000. Both products are networkable.

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IDC Study on UNIX OLTP

UNIX On-Line Transaction Processing at Multi-User UNIX Sites (January 1991) states that some 47.4% of sites running commercial applications on multi-user UNIX systems are running OLTP. The study reports that Informix is in use at more sites than any other DBMS for UNIX OLTP applications.



About the TPC

The Transaction Processing Performance Council (TPC) was founded in 1988 to define transaction processing benchmarks and to provide performance data to the industry. Today, 40 hardware and software vendors, including AT&T, Bull, Sybase, Data General, DEC, ASK/Ingres, Fujitsu, IBM, Informix, Hewlett-Packard, NCR, Olivetti, Oracle, Pyramid, Sequent, Siemens, Sun, and Unisys are members.

Within the past five months, *every one* of these companies selected and used the INFORMIX-OnLine database server to demonstrate to their customers the power of their latest UNIX systems. No other UNIX database product has been this extensively benchmarked—because nothing shows performance like OnLine.

New TPC Benchmarks Used

In each case, the Transaction Processing Performance Council's rigorous TPC A and TPC B benchmarks—the new standard for comparing system and database performance—were used to highlight OLTP performance and database throughput.

The Number 1 Choice for UNIX OLTP

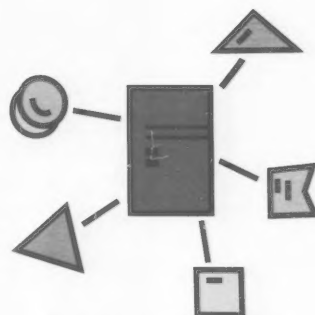
Informix is the number one UNIX OLTP choice. A January 1991 International Data Corporation (IDC) study shows that when it comes to UNIX OLTP applications, Informix products are installed at *more than twice as many multi-user UNIX sites* as our closest competitor. It's independent confirmation that thousands of companies worldwide rely on Informix-based OLTP solutions every day.

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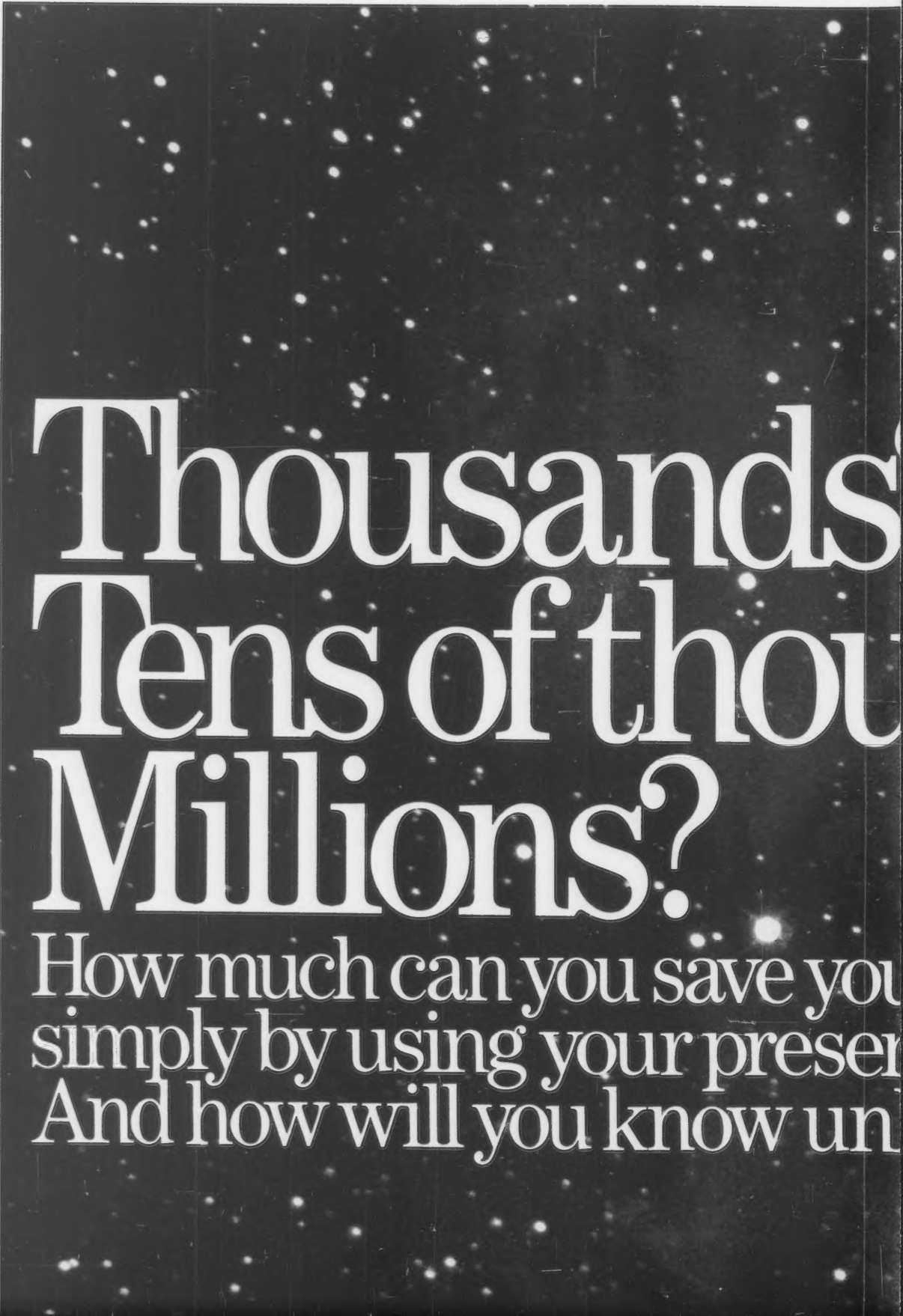


TP1 vs. TPC Benchmarks

The TP1 benchmark is no longer the accepted benchmark for measuring database performance. The new TPC tests establish more complete, thorough specifications than TP1, leading to more objective, verifiable results for comparing performance between hardware systems and software products. TPC Benchmark™ A measures OLTP processing performance. TPC Benchmark™ B—similar to a batch test—focuses on database throughput.



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TECH TALK

Making the grade

■ Researchers at IBM's Thomas J. Watson Research Center recently reported having developed the first superconducting magnetic gradiometer that can be operated at 320 degrees below zero Fahrenheit. A gradiometer is a device capable of measuring extremely weak magnetic fields. It is useful in medicine, for example, to measure magnetic fields emanating from the heart and brain. The researchers developed a gradiometer that operates using liquid nitrogen, which is not as cold or as expensive as liquid helium.

Together in compression

■ Fuji Photo Film Co. and Zoran Corp. have jointly developed an image compression chip set. The two-chip set implements a transform domain algorithm for compression of a continuous-tone color image, similar to the algorithm specified in the International Organization for Standardization's Joint Photographic Experts Group standard. Commercial uses of the chip set include digital still video cameras, memory card players, image transmitters and video graphics printers. The two firms recently inked a long-term joint development pact.

Sensing software

■ Scientists at Los Alamos National Laboratory have developed software that mimics visual and auditory senses in hopes of understanding how the human brain processes information. The program, called Neuro-builder, was designed to model vision and hearing senses and is the first step toward building more complex models of how the brain actually encodes and processes data, the scientists said. Once perfected, the models might be used to create computer chips capable of "seeing" and "hearing," using the same kind of processing as the human brain. The chips could help design hearing implants as well as smart cars that could see and avoid accidents.

Pac Bell reaching out after ruling

OK to publish electronic data may bring expansion of high-tech services by year 2000

BY JEAN S. BOZMAN
CW STAFF

Pacific Bell, like the rest of the regional Bell operating companies (RBOC), has long wanted to offer information services to augment its networking revenue. Thanks to federal judge Harold Greene, who decided last month to allow the RBOCs to publish electronic information, Pacific Bell may finally get its chance.

Among the services already being tested in Pacific Bell's advanced technology laboratories in San Ramon, Calif., are full-motion videoconferences, on-line medical consultations and electronic retrieval of books from far-off libraries. None of these services can run over today's network infrastructure because they require higher bandwidth than is available.

Look for fiber-optic networks with the needed capacity to be in place by the year 2000, experts said.

Before Greene's ruling, Pacific Bell's plans called for outsiders to create the information services that would be transmitted over phone company lines. Now, Pacific Bell may consider providing some of those services itself, working in conjunction with Bellcore. Bellcore is developing the fiber-optic signaling technology.

"It all depends on how they choose to participate, once they are free to do so," said Caroline Michel, an analyst at International Data Corp. in Framingham, Mass. "They have been prevented from altering the data in any way, so they had to go to outside providers to create value-added networks."

Pacific Bell computer scientists are concentrating on the software needed to glue these high-speed services together. They are already simulating the electronic retrieval of multimedia materials from the San Francisco Public Library (see story at right).

Another test program involves experimenting with a medical conferencing system over high-speed local- and wide-area networks that would combine voice annotation and scanned images on high-resolution monitors.

Work not yet complete

The infrastructure that would carry these futuristic applications is clearly not yet in place. End users can only approximate some aspects of these services now if they own multiplexed, high-speed leased lines or connections to an Integrated Services Digital Network (ISDN) switch.

"You might see some deployment of these services in 10 years," said Frederick Chang, executive director of technology laboratories at Pacific Bell. "It's not going to happen tomorrow."

Missing from the picture, Chang said, is a public, packet-switched network intelligent enough to support

variable-speed transmissions at data transfer rates of up to 150M bit/sec. Currently, the fastest Pacific Bell data network generally available is a T3 line running at 45M bit/sec.

More statewide ISDN switches are also needed, Chang said. Pacific Bell is expanding the number of ISDN sites at California central-office switching points, boosting the number from 35 sites in 1990 to 88 by year's end.

The post-1995 packet-switched

gent networking software and planning how it will re-engineer its statewide voice and data networks. Artificial intelligence will be a key element in tying together multiple data networks, Pacific Bell scientists said.

"As the bandwidth goes up, we will need intelligent networks more and more," said Eric Firdman, an AI expert and director of Pacific Bell's Strategic Information Systems Group. Current phone networks already use some mea-

A true library at home

By the year 2000, the best way to check a book out of the San Francisco library may be to stay at home and order it using your home computer. A pilot project that would allow San Franciscans to do just that is under way at Pacific Bell labs and is set for a public demonstration in 1992. The data network will be installed in the city's new public library building when construction is completed in 1995.

"The idea of an interactive, multimedia library goes beyond that first trial," said Paola Tonelli, director of Pacific Bell's Libernet project. "It will lead to interconnections with other [San Francisco] Bay-area libraries." One day, it might even allow San Franciscans to dial up the Los Angeles city libraries, she said.

The working model of Libernet is based on an Apple Computer, Inc. Macintosh II workstation using software on a compact disc that for now is a substitute for the multimedia information that will one day be transmitted over broadband lines. The system also uses a videodisc player, videodiscs and Apple's Hypercard user interface. In a recent demonstration, a designer called up a program that displayed a musical score by Mozart, along with historical information, while the music played back through the Macintosh's built-in speaker.

Before Libernet becomes reality, the library must set up a series of database servers with electronic directories for each server.

JEAN BOZMAN



Pac Bell's Tonelli envisions Libernet data network someday dialing up Los Angeles libraries

network will have to synchronize the delivery of disparate types of data "that will zip through the central switch and then arrive at the workstation screen in a synchronized fashion," Chang said. Among the types of data to be combined are images, text and sound.

The process is akin to chopping a personal letter up into pieces and sending each piece separately to be assembled at its destination. "If it isn't done right," Chang said, "it's going to look like a B movie in which a person's lips move before you hear his voice."

To achieve that kind of coordination, Pacific Bell is designing highly intelli-

sure of AI to decide the best way to route long-distance calls, Firdman said. In the future, AI will be used employed to route special data services to customers, selecting the right speeds and the right lines to get the job done.

Comprehensive planning should allow new Pacific Bell data networks to take shape alongside today's voice and data links, Firdman said.

"I am a strong proponent of top-down planning and bottom-up implementation," he said. "We have to picture what we want to accomplish for the next five years, but we will start implementing the high-priority parts of the plan right away."



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EDITORIAL

OS/Who?

If you gave up trying to make heads or tails out of Microsoft's recent positioning statements on operating systems, don't feel bad. Looking back on what Microsoft has said about OS/2 and Windows over the last six months, it's hard to believe the strategy is even clear to Microsoft.

The split between Microsoft and IBM has become so overpowering that it has overwhelmed the technical issues that are really important to customers. For example, at press briefings two weeks ago, Microsoft gleefully crashed a beta-test version of IBM's OS/2 2.0, explaining that it was only getting back at IBM for a similar stunt it had pulled on Windows a few months back.

Microsoft's Steve Ballmer said 2-year-old plans to merge the IBM and Microsoft LAN operating systems had been scrapped, an apparent victim of the schism. Tough luck for users who have banked on Microsoft sticking to its announced plans to complete that project. Nor will Microsoft produce an advanced version of OS/2, as promised. Instead, it will do a similar project based on Windows, whose only link to OS/2 will be software that helps users get away from it.

IBM has been no angel in this dispute either. It has pointedly snubbed Microsoft's every move to promote Windows. IBM's April OS/2 road show and its recent moves to shore up Microsoft competitors like Borland and Apple appear as much intended to repulse Microsoft as to boost IBM's own agenda.

What's keeping both companies from articulating a clear vision is that neither will give up its efforts to be all things to all people. Both companies are staking their claims on products that won't be delivered for some time.

Microsoft's confusing statements on OS/2 stem from its plans to build something better, something that all desktop users can migrate to. The problem is the name of that future product keeps changing. Is Windows New Technology (its current strategic direction) just another form of the OS/2 New Technology product that it pledged to build earlier? How does it relate to the OS/2 3.0 that Ballmer said Microsoft is still building for IBM under contract? Does OS/2 have any future whatsoever in Microsoft's plans?

IBM has rested its claims on including a "better Windows than Windows" in the next version of OS/2. The problem is, none of the beta-test versions have indicated they can do this, and Microsoft is now pointedly saying that IBM can't.

Four months ago in this space, we called spirited competition between IBM and Microsoft in the desktop operating systems arena a good thing. That's still true, assuming the competition centers around delivering a better product to the customer. Unfortunately, the battle recently has been over who, through trial and error, can better describe a vision of the future that is the most palatable to the most people. The messages are being watered down, products are undelivered, and customers are confused. You can't blame them for not making decisions based on plans that change with the seasons.

What dogs hear when Microsoft and IBM explain their positions on OS/2 and Windows.



What they're really saying...

BLAH BLAH BLAH OS/2 BLAH BLAH BLAH WINDOWS BLAH BLAH BLAH BLAH BLAH.



©1991 R.H.F. - N.W.T. / Chrysler Oct. - "Tip o' the Hat" to Gary Larson.

LETTERS TO THE EDITOR

Are we having PC power overload?

In his article, "The job description never said a thing about running a data center" [CW, June 10], Dennis E. Noonan struck a deep nerve.

Being an "old" data processing worker, growing up with IBM's 1400s, 360's 4300 and 3000, along with the NCR 8200 and 8400, Hewlett-Packard's 3000 and the rest of the mid/max/mini machines, I feel we have come full circle.

The personal computer was meant to be a simple screwdriver, pliers or wrench to help in my everyday work load — maybe get rid of some files and do budget balancing and analysis.

Now we need a techie to help users. The connection of all the applications is such a pain that many of us don't even bother.

I feel that those who do bother or like this environment are more interested in the method and tools than the reasons we purchased the stuff in the first place.

I have more power on my desk than General Motors had in their entire data processing department when it started in 1963. Maybe we have overdone it.

Tom Bartz
Business manager
Experimental Aircraft
Association
Oshkosh, Wis.

Finishing the story

The article "On the road with computer routing" [CW, June 17] gave a nice summary of the state of the art with respect to

the traveling salesman problem, but it did contain one error.

The methods used by Manfred Padberg and Giovanni Rinaldi to find an optimal tour of 2,392 cities were not developed at AT&T Bell Laboratories.

Their "branch-and-cut" approach has a long history and attacks the problem from an entirely different angle than that taken by the heuristic approaches developed at Bell Labs.

Padberg and Rinaldi did use an implementation of our Lin-Kernighan heuristic to determine an initial tour, but that still left them some 3% above the optimal tour length.

The real work then began, since they had to improve the tour to optimality and at the same time prove that no further improvement was possible.

Readers interested in finding out more about their approach are referred to their paper, "A branch-and-cut algorithm for the resolution of large-scale symmetric traveling salesman problems." This can be found in the March 1991 issue of *Siam Review*.

David S. Johnson
Mathematical Foundations of
Computing Department
AT&T Bell Laboratories
Murray Hill, N.J.

Governing those who govern us

Regarding "Developer certification bill sparks battle in New Jersey" [CW, July 15], Assemblywoman Barbara F. Kalik's concern about software quality and protection from "unscrupulous" developers in introducing the developer bill could be carried further.

How about licensing computer equipment manufacturers so that licensed software developers could develop software on quality hardware platforms.

How about licensing assemblymen and assemblywomen so that the general public is protected from unscrupulous politicians.

R.M. Rao
Vice president
ISI Systems, Inc.
Clifton, N.J.

Backward support

I work in the MIS department of a pharmaceutical company in Slovenia, Yugoslavia. Some members of our team are on the front fighting the invading Communist army, which is trying to crush this young democracy in Slovenia.

As I read several articles about preparation of U.S. IS people to fight for freedom and democracy in Kuwait, I am very disappointed because the indifference of U.S. government in effect gives the support to Communist dictators in Belgrade.

I speak in the name of many of my IS colleagues who are sharing my disappointment by this American attitude.

Miran Kaps
KRKA Pharmaceutical
Slovenia, Yugoslavia

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor In Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail: COMPUTERWORLD. Please include a phone number for verification.

Forget the trophies and concentrate on quality

BY BELDEN MENKUS



The last thing the computer industry needs — if it is serious about achieving quality — is quality awards fashioned after the Malcolm Baldrige National Quality Award program.

The 4-year-old program of the U.S. Department of Commerce has already spawned one imitator. Washington, D.C.-based Adapso, which describes itself as the computer software and services industry association, has initiated an essentially comparable program for the members of its Software Industry Division — the so-called Total Quality Awards.

Undoubtedly, the intentions behind this effort are good, but given some of the flaws that are now becoming apparent in the Baldrige awards program, emulation strikes me as a bad idea.

Serious questions are now being raised about the integrity of the Baldrige awards, centering

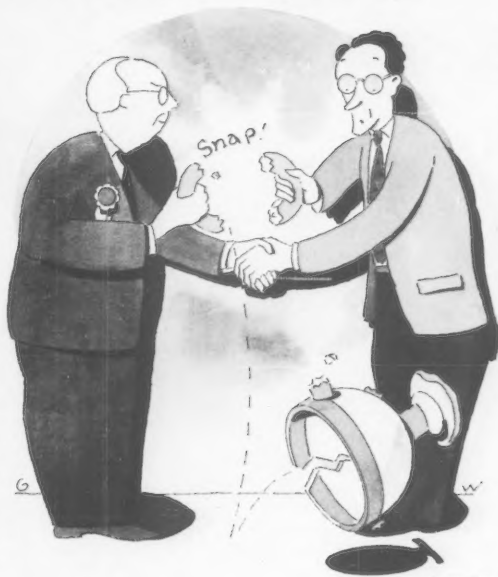
on the activities of the 50 private quality consultants who are among the so-called quality examiners that act on behalf of the Commerce Department in identifying award candidates.

The compensation provided to the Baldrige award examiners is minimal. However, many of the consultants offer lucrative courses and other special services to companies that are seeking the award.

One consultant charges nearly \$800 per registrant for a several-day course that trains would-be quality examiners. The number of applicants has increased almost 100% annually during the life of the program.

Another consultant reportedly charges up to \$5,000 per day to conduct in-house seminars for managers seeking to learn how to qualify their companies for the award. And a newsletter is now being marketed that purports to advise executives of companies seeking the award on techniques for achieving it.

Baldrige award examiners are prohibited from judging their own clients or the clients' com-



Garrison Weiland

petitors, but there is no independent verification that this prohibition is being honored. And

there is also no independent verification of the reports prepared by the examiners.

What's even more disturbing about these procedural flaws, however, is the way that such an award program shifts emphasis away from the real work at hand. The Baldrige awards and follow-ons such as the Adapso Award program mark a major change in the values of the quality assurance movement and in the way quality is viewed.

Quality was originally seen as something that could be inspected into a product; product defects were to be eliminated through inspection at the end of the production process. In recent years, egged on by Japanese achievements, U.S. firms had started to revise their views on how quality should be achieved, paying attention to the contentions of W. E. Deming and others that quality must be built into products from the earliest stages of development.

Now, however, there is a very real danger that we will again be thrown off track; this time by awards programs, which place more emphasis on winning than on the process of achieving real quality.

Menkus is an independent systems consultant in Hillsboro, Tenn.

No one can read the entrails of a computer

BY CHRISTINA REBHOLZ

If you are reading this article, you probably subscribe to *Computerworld* and are thus on more computer seminar/software/hardware/bingo card mailing lists than you ever realized existed. Occasionally, it's a good idea to attend some of the seminars, both to learn about the new products and to see how much the vendors are willing to ante up along with the proverbial free lunch.

Frequently, one of the vendor's highlighted speakers will be an industry analyst. The analyst, usually in a somewhat subtle way, will come up with reasons for buying the vendor's product without actually mentioning the vendor's name. How effective is this? Well, truth be told, if I believe in the vendor's product before I walk into the room, I tend to think that the analyst is clever. If I don't, I rapidly start the countdown to lunch.

The fact is that the statistical data produced by industry analysts is corollary proof to the Heisenberg Uncertainty Principle, which says the closer you look at an object, the higher the odds that the object has moved and that you may be looking for the wrong thing.

There are three main reasons why I immediately have to question any analyst's report.

First, like you or me, industry analysts have their own set of biases based on their job history. For example, there's a large well-known analyst group with a strong bias toward IBM mainframes, primarily because most of its staff used to work for IBM. They can do an excellent job telling you exactly how to manage your glass house.

The trouble is that they are unfamiliar with new products that don't work with IBM mainframe hardware. If you use them as a principal source of product information, you may discover someday that your system is not the correct technical solution to all of your problems. The trick is knowing which paradigm an analyst stands for before you follow his or her advice.

Second, analysts tend to lag reality rather than lead it. This makes sense; most of their information comes from being the census takers of the computer world. But having a good fix on the immediate past does not necessarily mean you can project into the future.

VAX market analysts provide a good example. It was only four years ago that DEC was riding high and analysts were producing numbers saying DEC would continue its expansive growth for several years to come. Unfortunately, for DEC stock owners, that didn't happen. In fact, there

was only one analyst I can remember who said anything to the contrary. (Don't worry. I heard him later at a vendor's conference where he was a hired gun, not necessarily speaking his own mind.)

Last, we work in the silliest industry in existence. If someone had told me in 1987 that IBM, Hewlett-Packard and DEC would all be part of a Unix consortia, that Apple and IBM would be working together and that Presentation Manager wasn't going to be the major application interface, I would have told them to add to the list that Mel Gibson was going to be my personal slave. Well, Mel hasn't called, but all of these other things have happened.

The fact is that there are just too many random gyrations in this industry for anyone to be able to predict them.

Neither IS managers nor vendors should rely on analysts as a flawless source of information. Analysts provide tremendous amounts of useful information, but not all that you need.

It's important to make sure that you work with analysts who share your computing paradigm, but it's also a good idea to talk to some who don't to ensure that you don't develop tunnel vision.

Most important, don't listen only to analysts. You can probably learn as much, if not more, about how to solve your business problems in a bull session with your own staff members.

Rehbolz is a software strategic marketing manager at Intel Corp. in Santa Clara, Calif.

Cracks in the glass slipper

Perfect partnerships are the stuff of fairy tales

BY JEFF ANGUS



When the princess kisses the frog, she turns into one herself. It's not the fairy tale ending from childhood, but it is the most common outcome of strategic alliances between big technology companies.

Pundits love fairy tales, though, and the most recent potential partnership to provoke feverish supposition and misguided interpretation is between Apple and IBM. The self-proclaimed experts have overstated the importance of the announcement by misreading the companies and by ignoring the ingredients that actually are important.

No relationship is ever strictly additive. The interplay of personality traits and differing needs means some compromises have to be reached. Compromises between visions usually achieve only a mosaic of mini-accomplishments.

Also, neither company's survival rests on this joint venture. Apple's newly opened, low-end market could benefit from it, but it doesn't seem to hinge on it. And IBM has always pursued multiple reasonable approaches, with a few off-the-wall ones.

Most analysts are basing their opinions on old preconceptions about the market. Even if the deal is successful, Microsoft


and Intel are not "on the ropes," as analysts have said.

Microsoft has a portfolio of profitable products, a strong relationship with users and distributors, native technology and a staff and funding that make it competitive. Intel was strong before IBM bought into it and now has the largest installed base of CPUs in the world.

Of the five shards of the announcement — joint use of a chip, joint invention of a development environment, integration of Macintoshes as clients to IBM servers, merging of IBM's and Apple's Unix standards and joint creation of multimedia platforms — analysts have focused only on the first two. That's because their clients are computer makers, not IS shops. These details are important to those whose business might be affected but are irrelevant in the workplace. Which RISC chip gets used doesn't affect user productivity.

In the end, all the attention spent on this agreement is interesting but not significant. The great advancements come when clever people who are responsible for managing technology figure out ways to attack the ineffectiveness of the white-collar workplace. Now that's worth some newsprint.

Angus is a manager at Parallon Computing, Inc., a maker of Apple Computer, Inc. Macintosh networking hardware and software in Berkeley, Calif.



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SYSTEMS & SOFTWARE

HARDWARE SHORTS Emissions controlled

Samtron Displays, Inc. in La Mirada, Calif., has announced plans to manufacture and sell the first high-resolution 48-KHz monitor to pass strict low-emission standards set recently by the Swedish National Board for Metrology and Testing. The SC-428VXL is a 14-in., flicker-free monitor that Samtron will manufacture as an OEM product beginning next month. Samtron is the U.S. unit of Samsung Electron Devices Co., a South Korea-based \$1.2 billion manufacturer of monitors, terminals, picture tubes and a variety of flat-panel display technologies.

Tera Computer Co. in Seattle has announced a \$7.5 million contract from the Defense Advanced Research Projects Agency to develop a general-purpose, high-performance computer system up to 100 times faster than today's supercomputers. Tera expects to unveil the system prototype in two years, with complete development of the prototype expected to cost at least \$30 million. The scalable, 64-bit, shared-memory parallel computer will encompass a family of models incorporating up to 256 processors, each with a peak performance in excess of 1 billion instructions per second, according to Tera officials.

IBM hopes to expand DRDA

New products, third-party support key to distributed database success

BY ROSEMARY HAMILTON
CW STAFF

IBM is working to put more meat on the bones of its distributed database strategy, company executives said in a recent interview.

At the same time, IBM has parallel efforts under way that also address the larger goal of providing users with easier access to corporatewide data.

The key piece to the distributed database initiative is IBM's Distributed Relational Database Architecture (DRDA). IBM has scheduled a status report on database products featuring initial DRDA implementations. "We owe an announcement on availability in the third quarter," said George Zagalow, manager of architecture and standards at the Santa Teresa Laboratory.

Company officials also indi-

cated late last month that they have plans for third-party support, which has so far been missing and is critical for IBM to push DRDA into the realm of heterogeneous environments.

"What I can say is, we are getting phone calls," said Jnan Dash, manager of strategy and technology at the IBM Santa Teresa Laboratory. "I think people are waiting to see the scope of the work involved."

A limited beginning

DRDA was actually introduced well after IBM took several distributed database steps. The initial moves, however, were product-specific and not tied to any publicly released master plan. Before DRDA's official release in 1990, IBM had introduced functions to provide limited distributed database capabilities for DB2 and SQL/DS databases.

IBM had been at work on DRDA since the mid-1980s, Zagalow said. Among other things, DRDA is intended to tie together these distributed functions as well as future releases under a plan for all Systems Application Architecture databases. IBM executives said DRDA will initially address requirements of its key customers, meaning it will emphasize high-end transaction-processing environments and address such mainstay information systems issues as security, data integrity and reliability.

The goal is to then expand it beyond the IBM platforms. In September 1990, IBM Santa Teresa executives said they were encouraging third-party suppliers to adopt DRDA. The selling of DRDA apparently continues, but it has yet to generate much public support.

In the meantime, the SQL Ac-

cess Group initiative, which, put simply, was designed to provide a standard data access method, is addressing the heterogeneous angle now. Its initial specifications, released last month, should be translated into products over the next two years.

However, IBM and the industry group are not yet working together. Neither party would rule out the possibility, but IBM executives stressed that their attention is on DRDA and on meeting high-end customer requirements.

Beyond DRDA, IBM has released a few tools that attack the data issue for specific products. For example, it began shipping the Data Propagator MVS/ESA earlier this year, which would allow users to move IMS data into a DB2 environment.

On a much grander scale, IBM has indicated that it will be announcing a master plan to provide relational data access from its various databases. IBM outlined plans for this complex initiative, informally known as the data warehouse, early this year.

Sunamerica shredding costs with paper cuts

ON SITE

BY ELLIS BOOKER
CW STAFF

LOS ANGELES — Creating a "paperless" office requires a variety of powerful and relatively new technologies.

However, an even more important key to success, according to executives at Sunamerica Corp., is the willingness to conduct a top-to-bottom review of the uses and abuses of paper records.

The insurance and financial services company considers it-

self in a vanguard of firms that have successfully eliminated paper with a combination of computers, imaging technology and sophisticated application soft-



SunAmerica

ware that routes electronic documents among workers.

Since vowing to wean itself from paper two years ago, Sunamerica has seen dramatic reductions in both its staffing needs and its response time —

for example, shrinking the time needed to answer a question from a day to "a matter of seconds."

"There was a tremendous amount of planning. Management teams worked for months on this," said Director of Business Services Rich Levine, referring to the decision to move most of the Broad, Inc. subsidiary's departments from Atlanta to Los Angeles two years ago.

The impending move, Levine said, provided an incentive to rethink and streamline the firm's entire business process, from the mail room up.

The result was a total staff reduction of 50%, to 200 people.

In addition, the deployment of a Wang Laboratories, Inc. imaging system and optical storage of

documents has eliminated the need for a large records department — a big benefit given the price of Los Angeles office space.

But the biggest benefit was an improvement in response time. Calls from policyholders and field agents can be handled "in a matter of seconds instead of a one-day turnaround," Levine said.

The even more paper-intensive process of "appointing" agents in the field to sell Sunamerica financial products was cut back from several weeks to one day.

"Frankly, the turnaround improvement has exceeded everyone's expectation," Levine said.

Not that the dramatic transition from a largely paper-based operation to an on-line, electronic one was painless.

Continued on page 26

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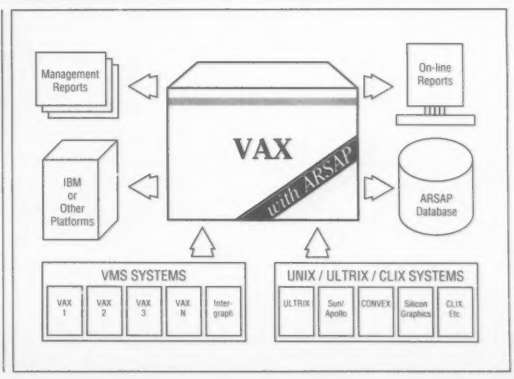
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Storage Tek's Iceberg RAID breaks IBM mold

BY J. A. SAVAGE
CW STAFF

LOUISVILLE, Colo. — Further distancing itself from its former strategy of trailing IBM's storage business, Storage Technology Corp. plans on having a fault-tolerant redundant array of inexpensive disks (RAID) device known as Iceberg by early next year — instead of following in IBM's direct access storage device (DASD) path.

Iceberg's first version will be compatible with the IBM mainframe environment, but the company plans on branching out to other, unspecified architectures. Whether users will be willing to endorse this new method of storage remains unclear.

Storage Tek sunk into Chapter 11 reorganization in 1984 but rebuilt its reputation around ungainly, but efficient, tape libraries that hold thousands of tapes fetched for mainframes by robotic arms. In part, executives blame the fall on the company's mimicking of IBM's products.

Now financially healthy, Storage Tek is following its own strategy. "We can't afford to let IBM do our product planning anymore," said Michael Klatman, vice president of corporate communications for the firm.

"We chose to skip the 3390 generation," Klatman said. He added that the company learned an important lesson from the library product. "Instead of chasing IBM, we learned if you differentiate, you can enjoy growth." Storage Tek bets that the less expensive, fault-tolerant RAID will attract customers who are looking to buy 3390s.

Although RAID's will be cheaper than DASD, Storage Tek's current users do not appear to be clamoring for the device. "If it can help us in future cost-reduction efforts, fine," said Keith Crawford, manager of computer operations at Deere & Co. in Moline, Ill. "But we don't want any problems being the first to try it." Deere uses Storage Tek's tape libraries.

Echoing the idea that there is no hurry to embrace new technology, Tom Keesling, GTE Data Services' director of operations services south in Tampa, Fla., said that there is "just not enough demand for DASD-type storage" to invest in Iceberg. GTE currently uses Storage Tek's older DASD.

Details, details, details

Revealing in detail the technology behind Iceberg, Klatman said it consists of 16 5¼-in. disks from Hewlett-Packard Co. For fault tolerance, there are "global spares," or floaters. Data is not written twice, as in mirrored fault-tolerant DASD, according to Klatman, but reverts to an unspecified copying mechanism when one disk fails.

With Storage Tek's RAID implementation, there is only a 15% to 20% redundancy, according to Jim Porter, president of Disk/Trend, Inc., a consulting firm in Mountain View, Calif. This is instead of the 100% redundancy in fault-tolerant DASD systems. He said that should translate into a 30% to 50% savings on an installation.

With Iceberg, Storage Tek is letting its DASD line of IBM 3380K-like devices wither away.

OK crowing over 4GL benefits

ON SITE

BY MARYFRAN JOHNSON
CW STAFF

FORT SMITH, Ark. — When the folks at OK Industries, Inc. talk about processing, they usually mean the weekly rollout of nearly 1 million chicken patties, nuggets and tenders for fast-food franchises and restaurants.

"Most people have never heard of us, but if they've eaten out, they've probably eaten our product," said Bob Cloninger, data processing manager at OK Industries.

With a major hardware and software systems overhaul completed a few years ago, this producer of chicken parts is at a crossroads now as user demands and business needs bump up against the limitations of its trio of Digital Equipment Corp. Microvaxes. The company moved off an IBM System/34 to the DEC environment, rewriting all its custom-built software in Cognos, Inc.'s Powerhouse fourth-generation language.

"I'm running into problems that are getting tougher to solve," said Cloninger, whose company has annual revenue topping \$126 million. "I know I'm going to need more power, but where am I going to get it? If DEC doesn't arrive in time with that [reduced instruction set computing]-based Alpha VAX, I'll be forced into migrating to

another RISC/Unix box."

The notion of buying bigger midrange machines such as VAX 6000s has no appeal, he said, because of the expense and the computer-room environment needed to support them.

Six years ago, OK Industries got by with one System/34 and seven terminals. Then rapid growth and an expanding product mix propelled the firm toward its current environment of Microvax 3100s, 3500s and 3600s supporting a dozen personal computers and 100 terminals on a Decnet/Ethernet local-area network.



OK's Cloninger: "I know I'm going to need more power"

"If there's any mistake made here, it's not recognizing early enough how important the network was," Cloninger said. "The boxes don't really matter as the hardware becomes commoditized."

Yet the turning point for the company's IS strategy was its migration to Powerhouse-based applications, Cloninger said. "All our screens are generated in Powerhouse now, which is a bigger deal than you might think. I spent years in an IBM mainframe background where it took weeks to assemble a screen," he explained. "Today we can get very nice screens in a few minutes. Powerhouse is very resource-efficient."

One memorable example of the difference the new software environment made occurred in January 1990, when OK Industries faced a major product recall

after tainted feed compromised a month's worth of chicken products. The rewritten sales order inventory system enabled programmers to trace all the questionable products by pulling relevant data from a dozen sources.

"We had recorded the information the federal government inspectors needed and were able to write those reports very quickly," Cloninger recalled. "In a Cobol environment, it would have taken three weeks, and the feds would have been able to shut us down."

The inventory and sales order systems support the sales force in a variety of ways, from quality control and lot tracking to spotting historical trends and pinpointing customer problems.

"It's not just having the information but having the ability to shift it around and present it untempered different ways," Cloninger noted.

One software project under way now aims to improve the system for tracking raw ingredients — from chicken part to Burger King entree.

Chicken processing makes a sizable scratch in the Arkansas economy, with the nation's biggest poultry supplier — Tyson Foods, Inc. — located 90 miles north of OK Industries. "Until Arkansas discovered chickens, all we had going for us was rocks," Cloninger joked.

The DP manager said he closely watches the shifting dynamics of the computer industry, particularly the downsizing trend from mainframes and mid-range systems to desktop machines linked via LANs. One of his critical sales analysis report takes 14 hours to run on a Microvax today, so the speed of RISC-based processing is compelling.

D&B Software takes ride on software leasing bandwagon

BY SALLY CUSACK
CW STAFF

NATICK, Mass. — When Dun & Bradstreet Software finalized an agreement with Chase Manhattan Leasing Co. recently, it joined the slowly swelling ranks of vendors and third parties that offer software leasing services to customers.

D&B's customers, predominantly IBM mainframe-driven Fortune 1,000 shops, will be able to take advantage of the financing program for contracts averaging between \$100,000 and \$1 million.

D&B officials said they will announce a similar agreement with Citicorp in the near future and another with an undisclosed third partner.

Aside from saving on significant cash outlay up front, leasing

programs allow users to better tie the software's period of benefit to the period of payout and allow fixed points for evaluation against monies spent, said Barbara Sannerud, program director at Gartner Group, Inc., a research and consulting firm based in Stamford, Conn.

These types of agreements could prove especially beneficial in today's pinched economic climate. The downside for end users could occur if there is a significant problem with the software — a customer can stop payments to a vendor but not to a third-party leasing company, Sannerud pointed out. The leasing companies could lose out if a software company went out of business.

Joseph S. Lemme, director of information services for Ulster County, N.Y., recently signed a

lease purchase program for D&B Software's Customizer product.

Lease purchase allows the client to own the software at the end of an agreed-on time period. This is unlike a traditional leasing agreement in which the software vendor or the third party would retain ownership of the product. Ulster County operates in an IBM 4381 environment.

Capital advantage

The biggest advantage, according to Lemme, is not having to pay large sums of cash up front.

"In today's economy, this allows us to continue with automation plans and without incurring a large, up-front capital outlay," Lemme said, adding that the shop also leases IBM hardware and software.

"Software vendors are push-

ing leasing with the big-ticket items," Sannerud said. "If a user has to commit to a half-million-dollar software package, leasing is sometimes more appealing, but more often, it is the higher credit risk shops or somewhat smaller shops that fall into the category."

Jim Crotty, a second vice president at The Travelers Corp. in Hartford, Conn., said the leasing idea seemed like a good one but was not something the insurance firm could take advantage of now.

"It would be a nice service if we were starting from scratch, but we are pretty current with all the D&B packages right now," he said. Crotty also noted that the leasing agreement would certainly give the vendor some sales.

The leasing idea has sprung

from the software companies themselves, rather than from their customers, according to Mark J. Specker, a senior research analyst at Gartner Group.

Development aid

Vendors absorb a tremendous up-front cost in order to get these products out the door, and they need to maximize revenue to fund further development. Leasing programs help with this by allowing vendors to make more sales or by shortening the sales cycle.

Specker cautioned that the real issue in software leasing — the one that will indeed determine the growth of this market — lies in whether an institution can make ownership of software a tangible right that can be transferred in the market.

"It gets complicated," he said. "Unlike hardware, there is no residual value to software products."

Sunamerica

FROM PAGE 23

"We did have some technical problems," acknowledged George Holdridge, vice president of information services. "But we never got to the point where we contemplated aborting the project."

Holdridge said the chief source of trouble was integrating multiple vendors' systems.

In the end, the 85-person IS team had to write a great deal of software, customizing both the Wang imaging system and a work-flow product.

Holdridge estimated the total cost in hardware and software was \$3.5 million, not including the investment in 120 IBM Personal System/2s that are used as viewing stations for the image files.

The imaging application at Sunamerica resides on a Wang VS 8000 minicomputer connected to an IBM Enterprise System/9000 mainframe in Atlanta. The optical jukebox in Atlanta accumulates a few thousand digitized documents per

day and has an on-line database of 2.5 million documents.

Every piece of paper that arrives in the Los Angeles mail room is scanned and indexed. But not all of the old paper files in Atlanta were put into the electronic system. "The very old documents are kept in Atlanta and scanned on demand," Holdridge said.

Levine and Holdridge claim

that paper printouts from the imaging system are a rarity. For this, they credit not only the imaging system but also an executive information system from Pilot Executive Software.

Meanwhile, Holdridge said he is thinking about the future, when the company may cut out the paper middleman and communicate with its representatives in the field electronically.

With some of the larger insurance agencies, Sunamerica already exchanges data tapes containing sales and commission information. But direct access to the Sunamerica database, Holdridge said, is at least a year away because of the need to modify this resource for security reasons.

While imaging technology is vital to a paperless approach,

both Levine and Holdridge suggested it is not the whole answer. It must, they said, be part of a larger plan to streamline business processes and eliminate unnecessary forms.

For example, a report-reduction analysis conducted prior to the move to Los Angeles and independent of the imaging project reduced the number of reports used by Sunamerica by 75%.

Paper rules

A "paperless" office promises so many obvious benefits — from making information instantly available across an enterprise to saving the Earth's trees — that the equally obvious problems with the concept can get overlooked. Here, then, are three basic objections to a paperless world:

- Paper is a marvelously portable and easy-to-read medium, still without equal. Imagine, for instance, reading the boss' memo in the washroom on a laptop computer.
- Paper is a psychologically familiar and trusted medium; people will not give it up entirely. Even ardent computer zealots would likely chafe at a corporate directive prohibiting printouts.
- Paper in the age of the computer is still a common denominator, a necessary bridge between the computer-equipped and the computerless. It is also a bridge, in the absence of fully implemented electronic data interchange, between computers that are not linked over networks or that use incompatible operating systems or applications software.

If You Really Want To Change The World, You Have To Work From The Inside.

Software jugglers find balance with Intersolv tool

BY CHRISTOPHER LINDQUIST
CW STAFF

Intersolv, Inc. has unveiled Version 4.0 of its PVCS series of configuration management tools that reportedly provide enhanced user interfaces, a gateway to mainframe-based library

management systems and query and reporting functions via a SQL export facility.

However, it was other features that caught the attention of Charles Bonomo, a systems officer at a major bank that is using the new release for version control in Fox Software, Inc.'s

Foxpro and C language development projects. Bonomo said two of the most important changes for him were a simplified installation process and an administration function that automatically limits the number of simultaneous users so that the systems administrator does not have to

track usage. "It makes life a lot easier for somebody who's trying to manage a lot of different software," he said.

Ease of use in the form of a quick-start utility that will get users up and running faster is attractive to Paul Radding, a senior manager at Deloitte &

Touche, which also has a systems development methodology product being marketed by Intersolv. Radding said one of the things his company is looking at specifically is the new SQL interface, which he said he hopes will allow much more flexible configuration reporting than previous versions of PVCS.

System coordination

PVCS Production Gateway will reportedly coordinate network-based files with mainframe management systems such as Computer Associates International, Inc.'s Librarian and Pansophic, Inc.'s Panvalet.

SQL Export allows users to populate tables in data products from companies including Oracle Corp. and IBM. PVCS Version Manager enhancements include software that allows integration with Microsoft Corp. and Micro Focus, Inc. Workbench tools.

The products in the series include PVCS Version Manager (\$600), PVCS Configuration Builder (\$250), PVCS Production Gateway (\$200) and PVCS Professional Editor (\$300). All products in the series are currently available.

Intersolv resulted from a merger between Sage Software, Inc. and Index Technology Corp.

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User group's work, efforts bring aroma of success

International Flavors and Fragrances works closely with the AMAPS enhancement committee

ON SITE

BY SALLY CUSACK
CW STAFF

Ever come back from a user group meeting wondering if all the hard work, time and effort were really worth it?

Users who have devoted countless personal hours to improving customer/vendor relations and to helping perfect product releases should have the reassurance that their efforts do indeed make a difference.

Bill Brandenburg is the vice president (U.S.) of International Flavors and Fragrances, Inc. in New York and also serves as chairman of the Dun & Bradstreet Software Advanced Manufacturing Applications Product Suite (AMAPS) enhancement committee. He is proof positive that the time spent on the committee is worth every minute.

Brandenburg stepped into an active user role back in 1985, when AMAPS was owned by Conserve, a company in Minne-

sota. An on-line version of the software had just come out, and there were some problems with the system.

Brandenburg was designated as the member of the management team to go to user meetings and get involved.

"We are now using the software at two plants: a major flavor plant and a major fragrance plant," Brandenburg said. "The enhancements that were initially most important to us were the multiple methods of production, but since then, there have been many others."

Relies on AMAPS

International Flavors and Fragrances supplies manufacturers with flavors for many well-known grocery items and supplies most major cosmetic and perfume companies in the U.S. The company's plants use 5,000 raw materials to produce these products and rely on D&B's AMAPS in a real-time, closed-loop MRP-II system running on an IBM 3090 200E.

According to Brandenburg, the AMAPS enhancement advisory council meets four times per year. Because each company has different needs, the commit-

tee runs a ballot to determine

which major projects should be selected as next on the agenda. AMAPS is currently installed at 1,000 user sites, and according to Brandenburg, 350 to 400 people attend the biannual user

Staying in touch

International Flavors has shown what types of results a company can get by being active in a user group

These are primary examples of previous enhancement requests submitted to Dun & Bradstreet Software from International Flavors and Fragrances, Inc.:

- Ⓢ Changes made to bill of materials are automatically entered into outstanding purchase orders, creating a more cohesive and streamlined information flow.
- Ⓢ The product now incorporates a unit of measure conversion facility, which accommodates the various forms of measurement the company inventories. This includes kilos, gallons and pounds.
- Ⓢ Consolidation of purchase decision reports as determined by both group buyers and individuals.



CW Chart: Janell Genovese

group conference.

The vendor has found it beneficial to work closely with the group, Brandenburg said. The group gathers ideas from various

users to develop functional requirements and then works closely with D&B's AMAPS team to help test the product.

When a revision is released, it is a product users know and support, with no reworks to be done

or extra things to fit.

"There have been about 40 significant changes made to the original purchasing system," Brandenburg said, noting that all of the major changes implemented by the group are now incorporated into vanilla code. "The objective is vanilla AMAPS."

There are 100 representatives to the advisory council, and Brandenburg said he would encourage both new and established users to attend the annual conferences and get active in meetings to share problems and solutions.

"Almost always there will be someone with the same problems," he said.

The AMAPS advisory committee has also established a sub-group that meets four times a year. Called the Small Enhancements Committee, it deals with the lesser product enhancements and is responsible for keeping the information flowing among users, the group and the vendor.

Brandenburg succinctly summarizes the entire process: "We view the process as users leading development; we encourage people to attend, bring new ideas and get involved."

NEW PRODUCTS — SOFTWARE

Development tools

Convex Computer Corp. has announced a visual debugger for highly optimized source codes.

Cxdb provides a window interface for debugging highly optimized Fortran and C language code. Users can simultaneously view the disassembly, source and program output versions of the same code segment.

Tiered pricing starts at \$9,500.

Convex
3000 Waterview Pkwy.
Richardson, Texas 75080
(214) 497-4000

Smartstar Corp. has enhanced the Smartstar Application Development Environment for Digital Equipment Corp. VAX/VMS systems.

Smartstar Version 6.0 debuts a syntax-free, interactive application builder that automates prototype development.

The Smartbuilder component uses information from computer-aided software design entity-relationship diagramming tools.

A fourth-generation language, SmartGL, is included for refining prototypes assembled by Smartbuilder.

Smartstar 6.0 offers other features and simplifies use through a pull-down menu.

Pricing ranges from \$8,000 to \$140,000.

Smartstar
120 Cremona Drive
Goleta, Calif. 93116
(805) 685-8000

Applications packages

SDC Software, Inc. has announced Release 6.1 of its Customer Information System sales management software for the IBM Application System/400.

The new version includes on-line searches in a number of fields, duplicate record detection and unlimited contact listings within each account, according to the company.

The Customer Information System costs \$7,500 on all AS/400 models.

A version for System/36 users is also offered.

SDC Software
110 E. Ann St.
Carson City, Nev. 89702
(702) 883-9339

Lotus Development Corp. has ported its Lotus 1-2-3 spreadsheet to the Hewlett-Packard Co. Apollo 9000 Series 400 and 300 workstations.

A single license costs \$695; client/server licensing is also available.

The company reported that it will add support for HP's Series 700 and 800 systems as well.

Lotus
55 Cambridge Pkwy.
Cambridge, Mass. 02142
(617) 577-8500

Stardent Computer, Inc. has announced the availability of its Application Visualization System (AVS) on the Hewlett-Packard Co. Apollo 9000 Series 700

workstation platform.

AVS allows users to use advanced graphics and visualization methods without graphics programming, according to Stardent.

Pricing for AVS on the HP Apollo Series 700 is \$4,950.

Stardent Computer
6 New England Technical Center
521 Virginia Road
Concord, Mass. 01742
(508) 287-0100

Utilities

Global Software, Inc. has improved its \$Name utility for mainframe users of Manager Software Products, Inc.'s Data-manager data repository.

\$Name controls file naming across multiple databases. The enhanced version automates naming convention enforcement by object type, checks logical and physical duplicates and automatically generates full business names and keywords, according to the company.

A perpetual license costs \$15,000.

Global Software
15 Depot St.
Duxbury, Mass. 02331
(617) 934-0949

Computer Recovery, Inc. has introduced the Spool Doctor, a print queue editing utility for the IBM Application System/400 platform.

The Spool Doctor allows users to edit files already in the print or output queue.

Data can be added, deleted, moved and copied via the full-

screen editor.

Pricing for the product, including source code in RPG/400, starts at \$395.

Computer Recovery
Box 1005
Rt. 3
Alvarado, Texas 76009
(817) 783-2208

HARDWARE

Power supplies

HC Power, Inc. has developed the HC Hotswap line of redundant power systems.

Models with 500W to 4,000W output are offered. The company reported that a power module can be removed and replaced in less than 60 seconds without interrupting system performance.

A unit with two plug-in modules and a 1,000W triple output costs \$4,500.

HC Power
17032 Armstrong
Irvine, Calif. 92714
(714) 261-2200

Processors

Neuralware, Inc. has announced two workstations for neural network applications development: the Superstation/PC and the Superstation/Sparc.

Both systems include a co-processor with integrated compiler software, a 16-in. monitor and a Super Video Graphics Array board.

The company's updated development software, Neuralworks Professional II/Plus, is

also included.

The Superstation/PC is based on the 33-MHz Intel Corp. i486 processor. The price is \$29,995.

The Superstation/Sparc is based on the Sun Microsystems, Inc. Sparcstation with 32M bytes of random-access memory and a small computer systems interface.

The system is priced at \$55,995.

Neuralware
Suite 227, Building IV
Penn Center West
Pittsburgh, Pa. 15276
(412) 787-8222

I/O Devices

Rosetta Technologies Corp. has expanded its RT4000 printer line. The new models achieve print speeds up to 30 page/min. using LED imaging technology.

The RT4230 Page Printer features a 16-MHz controller and dual internal disk drives. An Adobe Systems, Inc. Postscript interpreter and a small computer systems interface (SCSI) hard drive are optional.

A duplex version, the RT4430, is also available.

The RT4430 Page Printer includes a 33-MHz controller, 52M-byte SCSI hard drive and Postscript interpreter. A duplex version, the RT4530, is also offered, according to the company.

Pricing ranges from \$13,995 for the RT4230 to \$22,595 for a fully configured RT4530 duplex model.

Rosetta Technologies
9417 Princess Palm Ave.
Tampa, Fla. 33619
(813) 623-6205

PCs & WORKSTATIONS

PC & WORKSTATION SHORTS

HP offers SCSI gear

Hewlett-Packard Co. has brought out two new small computer systems interface (SCSI) subsystems for mass storage. One SCSI product line is aimed at HP Apollo workstation users; the other is targeted at multiuser HP systems. HP configures the system as digital audio tape drives or standard disk drives. Three models for workstations offer up to 1.355G bytes of storage, also the highest capacity for the eight multiuser products. Pricing starts at \$4,075 for the multiuser products and ranges to \$9,575, with workstation offerings running from \$5,175 to \$8,175. Upgrade kits are also available, according to the company.

Clarisc Corp., the software subsidiary of Apple Computer, Inc., announced it would demonstrate Clarisworks, its integrated package that includes word processing, graphics, spreadsheets, charts, database management and communications, at Macworld Expo in Boston. Clarisworks, which is expected to become available in the fourth quarter of 1991, will retail for \$299.

Truce targets OS/2 kit buyers

BY PATRICIA KEEFE
CW STAFF

Microsoft Corp. is mulling over various plans of action designed to mollify some buyers of the estimated 4,000 to 5,000 OS/2 developer's kits it has sold, and it will make its peace plan public next month.

In an interview last week, Steve Ballmer, Microsoft's senior vice president of systems software, acknowledged that Microsoft does have a credibility problem with some unhappy OS/2 developers.

According to Ballmer, however, it is mostly purchasers of the OS/2 2.0 developer's kit that are likely to be "ticked."

He said Microsoft has sold about 1,000 such kits, adding, "We're not getting as much heat as some might think."

"We are evaluating what to do to make these people feel happy," Ballmer said. His suggestion that Microsoft might make the forthcoming Windows New Technology tool kit available at a low cost or free of charge backed industry rumors to that effect.

Microsoft's viewpoint, according to Jesse Berst, editor of the "Windows Watcher" newsletter, is that the only ones that are in trouble are those few companies that have applications that exist only in an OS/2 form. Microsoft's solution to the problem, then, is to tell the develop-

ers to develop for Windows, he added.

But that may not appease small developers who have sunk their dollars into OS/2 and cannot wait until New Technology appears on the market, estimated for late 1992 at the earliest.

Cost a major concern

Chief among the complaints flung Microsoft's way, developers and analysts said, is the \$3,000 cost for the developer's kit for the as yet unfinished and upshipped OS/2 2.0. The Windows Developer Kit goes for a more modest \$495, developers said. Support is extra.

Steve Rosenberry, president of Parallel PCs, Inc., is develop-

ing an OS/2 communications add-on, and he said he thinks the cost of the developer's kit is "outrageous." He is no happier with support costs. He said he pays \$900 a year for on-line support under his agreement for his OS/2 1.2.1 developer's kit. He has not purchased the OS/2 2.0 kit because it will cost him another \$3,000, and his existing on-line support will not handle questions on OS/2 2.0.

Berst recently attended a Microsoft developer seminar where only a handful of the 300-plus attendees were OS/2 developers, but he said they were clearly unhappy.

During the seminar's question-and-answer session, Berst said, some of the disgruntled OS/2 developers stood up and "yelled at Microsoft," [saying

Continued on page 35

Rigid licensing draws Wordperfect users' ire

BY CAROL HILDEBRAND
CW STAFF

As an increasing number of software companies tempt users with more liberal licensing policies, Wordperfect Corp.'s granite-hard stand could land the firm between a rock and a hard-to-find user base.

More businesses say they are moving away from stand-alone word processing, and Wordperfect's steadfast endorsement of its "one license, one copy" policy has some businesses questioning the feasibility of moving the dominant word processing

product onto a network.

"We would lean toward those companies that offer a concurrent licensing policy," said Glen Jurmann, office technology section manager at Baxter Healthcare Corp.

Ed Johnson, a microcomputer analyst at Snap-on Tools Corp., agreed. "It could definitely be a factor in such a decision," he said.

Johnson said that although he considered Wordperfect's licensing policy one of the stricter ones, he had no argument with software firms trying to ensure that prospective users pay the

price. However, because his company was recently raided by the Software Publishers Association, he said he wants to make doubly sure that its corporate nose is clean.

Johnson said that a number of software publishers are easing up on their licensing policies, which serves to lessen potential legal headaches.

Reports of a recent closed-door meeting with members of the Corporate Association for Microcomputer Professionals and Microsoft Corp., Wordperfect, Ashton-Tate Corp. and Lotus Development Corp. cited Wordperfect as having raised user ire for its failure to address

Wordperfect's license policy requires the following:

- One license for every copy used. The exception is an archival copy that is an essential step in using the product, such as a copy on a dedicated network server.
- Each copy of the software product existing on a network should be separately licensed, whether or not it resides on a hard drive or is in node memory.
- The end user may use either the DOS or Windows version of Wordperfect on a single machine with a single license that may not be split between multiple machines or users.

CW Chart: Janel Genovese

network licensing needs.

With network sales projected as 65% to 70% by 1995, Wordperfect could be cutting off its nose to spite its face.

Continued on page 34

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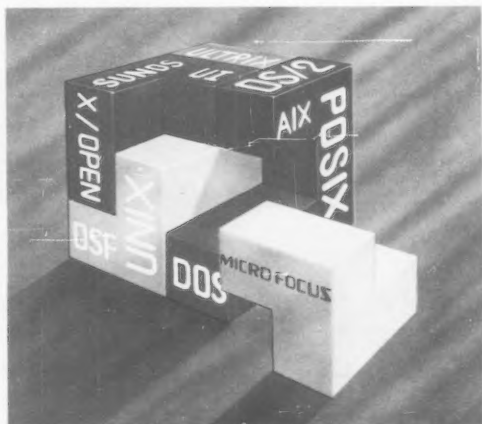
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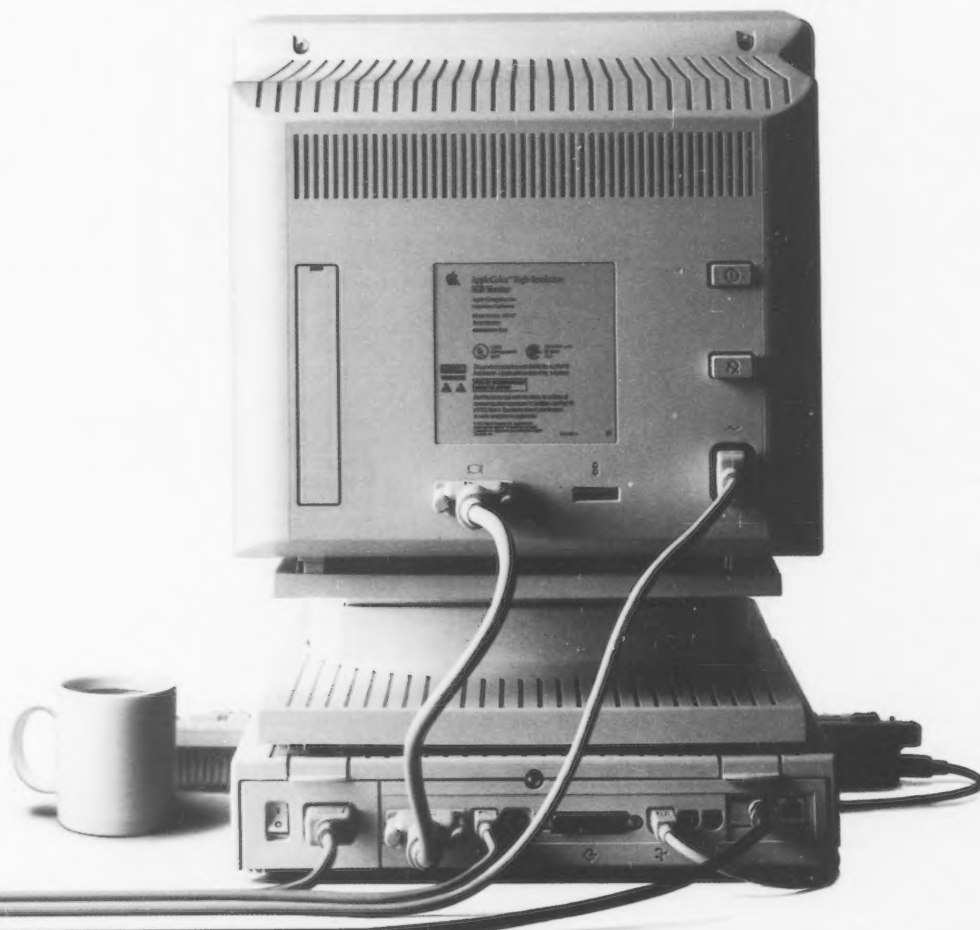
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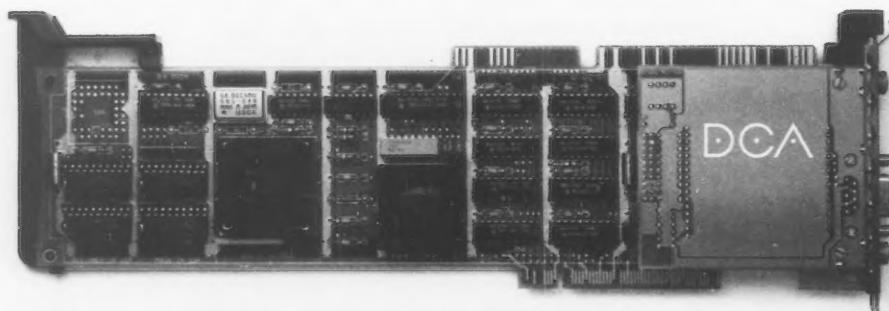


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Giants use high-tech strategy to design winning game plan

ON SITE

BY CHRISTOPHER LINDQUIST
CW STAFF

Opposing coaches are not the only people who get irritable thinking about the Buffalo Bills' "no-huddle" offense. Jon Berger, computer coordinator for the New York Giants, can't stand it.

"I hate it when Buffalo comes in to play us," he acknowledged. The strategy not only confuses defenses, but it makes one of Berger's many duties, collecting game statistics on a personal computer, more difficult. "There is just no time," he said.

Despite the hazards of unusual offenses, Berger still considers his position to be a dream job. Berger started working for the Giants as a security guard in 1981. After earning a computer science degree, he became a

public relations intern. After the Giants' Super Bowl victory following the 1986 season, he was offered the chance to take charge of the team's limited computer resources.

But Berger, who is working hard to move the Giants into the computer age, has more exotic plans for the future.

Leading-edge focus

In the long term, Berger is interested in using some cutting-edge technology to assist the team. He is especially intrigued by the idea of using notepad computers in scouting and training applications.

Some teams have scouts using laptop computers for data input, he added, but the learning curve and scout resistance reduce the appeal of keyboard-based systems. Notepad computers would eliminate that barrier. "You put a pen in the

guy's hand, and you just tell him, 'Well, you just write onto the screen instead of writing on paper,'" he said.

Berger has looked at notepads from Grid Systems Corp. and is waiting for the release of the 3125 notepad from NCR Corp. Fortunately, he said, he is in no rush to buy the systems and can wait until one comes out that he knows will do the job well.

One reason for the lack of immediacy is the fact that the National Football League (NFL) has been rather slow to computerize. The Giants (the defending Super Bowl champions this year) got their first computer, a Digital Equipment Corp. Microvax II, in November 1985, after the



Rick Stewart/Albany

The New York Giants have more than a passing interest in using cutting-edge technology to help lead them to future Super Bowl victories

NFL initiated its NFLnet communications system.

No one on the team's staff knew exactly what to do with the machine, however, so it sat mostly idle until Berger started as an intern in 1986. Soon, the computer was being used for more than just occasional electronic mail.

Some of the first applications to be run on the system were coaching systems and scouting databases. One such database, from Anjon Corp. in South Bend, Ind., keeps track of information such as weight, speed and scouting reports on each college senior playing football in U.S. and some Canadian schools — data that is invaluable at draft time.

Help for the coach

One of the more strategic uses of the system is in coaching. Applications have been written to analyze team tendencies, both for the Giants and their opponents, in different game situations. The information can then be used to strengthen a Giants weakness or exploit the weak spots of the opposing teams.

This information has to be extracted and examined before game time, however, because

the NFL forbids using computers to analyze a game while it is in progress, Berger said.

It is hoped that projects like these will give the Giants an edge on the field over opponents who may not be as computer-oriented. Many teams have yet to upgrade their Microvax IIs, something the Giants did just last month when they took delivery of a VAX 4000.

"We were just running out of everything: disk space, memory, user ports. We need more of everything, and DEC came in and made a pretty attractive offer to all of the NFL clubs," Berger said.

The new system will allow the Giants to add more coaching and scouting applications.

For now, the most important issue Berger will be facing is finding the time to input statistics when the Giants face the Bills in their preseason opening game tonight.

The press box will be full, Berger said, and the reporters will not make his job any easier. "During the game, all the press leans over and says, 'How many yards for Thurman Thomas?' and 'How many yards for Jim Kelly?' And we've got to know."

Microsoft makes changes in SQL line

BY JIM NASH
CW STAFF

Microsoft Corp. is cleaning up its SQL Server relational database management product and tightening the software's compatibility with its SQL development partner.

At the same time, the company announced plans to eliminate its five-user SQL Server package, leaving 10-user and unlimited-user packages (priced at \$2,995 and \$10,995, respectively). The changes came with the release of SQL Server Version 1.11.

The Redmond, Wash.-based

software company said it has folded a previously available patch into Version 1.11 that fixes a problem that occasionally causes a DOS workstation to lose its SQL database session on a Novell, Inc. Netware network. Gary Voth, product manager for SQL Server, said database sessions sometimes closed unexpectedly.

Voth also said Microsoft has added client interoperability with Unix- and Digital Equipment Corp. VAX-based SQL Servers from Sybase, Inc., its partner in developing the database tools.

While some users agreed that

it is never too late to introduce better connectivity to a product, one said a Sybase connection would have come in handy when he was setting up his system. Jeff Warner, systems analyst at the U.S. Postal Service in San Francisco, found that an OS/2-based database server would bog down intolerably when too many users were working with multiple sessions on a Microsoft Windows-based SQL Server application.

Warner said his office is now considering moving from its Oracle Corp. SQL database application and will look again at Microsoft for access to Unix and VAX database servers.

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Lotus fine-tunes its 1-2-3 products

BY PATRICIA KEEFE
CW STAFF

CAMBRIDGE, Mass. — In between major product releases, Lotus Development Corp. is keeping busy with a flurry of announcements targeting smaller segments of its 1-2-3 market.

Citing customer demand for added functionality, Lotus recently added several features to 1-2-3 for VMS and 1-2-3 for All-In-1. Both VMS and All-In-1 are Digital Equipment Corp. products. Version 1.02 of both products provides an enhanced Datalens driver for DEC's RDB 4.0 database management system as well as the integration of addi-

tional Xerox Corp. and Sixel printer drivers and Pathworks Version 4.0 certification.

Both products were slated to ship from Lotus at the end of last month and will be available through DEC a little later. Version 1.02 supports VMS Versions 5.3 and 5.4 as well as All-In-1 Versions 2.3 and 2.4.

Greater access

The enhanced RDB Datalens driver supports DEC's SQL Services, allowing users to get to RDB data via the Explicit, Proxy and Default access methods. Also provided is access to information residing in RMS files through support of RDB/Access

for VAX RMS and CDD/Plus database definitions. Users now have automated access to RMS.

Having previously jumped into the race involving migrating users of 3Com Corp.'s 3+ Mail and 3+ Open, Lotus increased the pressure.

The company is extending two incentive programs that enable 3Com users to move over to Lotus' CC:Mail network-based electronic mail package. The programs, which were slated to end in June, will be continued through Dec. 31.

Lotus is offering a trade incentive to any company converting more than 500 3Com mail users to CC:Mail. For every three

3Com mailboxes converted to CC:Mail, the user will receive one free CC:Mail box.

Customers with fewer than 500 3Com mail users can get one free CC:Mail MS-DOS Platform Pack and an Eight User Pack for each server version of 3Com mail converted.

Also expected to entice users is the development of two mail tools slated for release this fall.

A gateway from CC:Mail to 3+ and 3+ Open Mail will ship in September. Developed to 3Com specifications, it reportedly allows 3Com mail users to exchange messages transparently with CC:Mail users. A mail conversion tool that will allow mail

to be transferred from a 3Com inbox or folder and placed into CC:Mail is also under development.

Graphics goes on

Turning its attention to the graphics market, Lotus recently introduced Smartpics Clip Art Libraries for use with 1-2-3, Freelance and Ami Pro.

Smartpics is licensed from New Vision Technologies, a Nepean, Ontario-based developer of clip art. Currently available, Smartpics for Freelance includes more than 2,000 images and costs \$299.

Smartpics/CGM (\$199) can be used with 1-2-3, Freelance and Ami Pro and includes more than 650 color and black-and-white images in the ANSI-standard CGM metafile format.

High tech puts wind in team's sails

BY SALLY CUSACK
CW STAFF

SAN DIEGO — Computerized analysis is now riding the waves with sailors and crew members aboard the 75-ft flagship *New Zealand*, a contender for the America's Cup in 1992.

The New Zealand Challenge team arrived in San Diego late last year to begin preparing for the May 1992 race. Part of the preparations involve several Hewlett-Packard Co. workstations and SAS 6.07, a software system from SAS Institute, Inc.

Hesitant to reveal much of their strategy, the challengers do acknowledge the software is used for statistical data analysis — measuring variables such as wind speed and angle via sensors attached around the boat.

SAS 6.07 is installed on six HP 9000/375 workstations running HP-UX. The workstations are spread among three boats, two support vessels and the docking facility on shore. Data is

collected by the support vessels and transmitted to the master yacht via a radio link, and all in-

formation is fed to the central system at the end of the day.

"The main advantage of the

SAS software is its versatility. It does any type of statistical analysis we would ever want to do," said Matthew Thompson, senior data analyst on the New Zealand team.

Thompson started looking for a statistical package back in 1989. He said SAS was selected because of its flexibility — changes can be made easily, and routines can be modified to fit the unique requirements of yacht racing.

The ultimate goal is to give the boat the best possible chance in any set of conditions, according to Thompson.



SAS 6.07 serves as part of New Zealand's America's Cup crew

Object-oriented tool eases application-building process

BY JAMES DALY
CW STAFF

Building an expansive, customized software application may be the ultimate information systems nightmare. A laborious design process is typically followed by a slow implementation stage wherein programmers deftly insert the new application and pray it does not upset the delicate system balance.

The glacial pace has another drawback: System requirements may change substantially between the time the application is ordered and the date on which it is delivered.

The result is that major software projects usually take upwards of two years and swallow millions of dollars — and still never ensure success.

Relief in sight

Clebern Corp. President Bernadette Reiter claimed there is a better way. Recently, the Boulder, Colo.-based firm introduced Macroscopic, a program development tool that uses object-oriented programming techniques to help users build applications quickly and simply.

Most current development environments using C language, Pascal, Fortran and Cobol force the developer to think in a linear, step-by-step fashion, complicating the development of systems having complex interrelationships. Macroscopic supplants those rigid methods with graphical icons a programmer can easily understand. Each "object" serves as a discreet module responsible for some facet of the application, similar in concept to the structure of a large organization where each staffer performs a single part of a larger whole.

Older chunks of code can be snapped out and bolted onto new

applications, streamlining the development process. Through this code-inheritance process, Reiter said, she hopes to usher in a new era of disposable software. "If a software program only takes three weeks to create, what's the big thing if you throw it out when it's past its point of usefulness?" she said.

Object-oriented programming techniques have already been trumpeted on a larger scale by companies such as Borland International, Inc. It was object-oriented programming, after all, that allowed the release of the Quattro Pro Version 3.0 spreadsheet [CW, April 1] only five months after the product's last edition.

Time saver

With Macroscopic, users have been able to create in weeks applications that had been projected to take a year or more. "The reusability of the code is key," said Mark Whitney, a senior project coordinator at Delta Airlines who is evaluating Macroscopic for a revenue control application. "We don't want to train an army of programmers each time we need to build a new application."

In addition to Macroscopic, Clebern also sells a graphic creation tool known as GT that allows a developer to draw graphical elements such as a customized window or schematic drawing. GT then automatically generates program code to incorporate that element into the application.

Macroscopic, including the program compiler, is available for an average of \$1,000 per workstation and can be had for as little as \$100 per workstation in large quantities, Reiter said.

The GT edition averages \$1,500 per workstation.

Wordperfect

FROM PAGE 29

The meeting "didn't give me any hope" for a more liberal policy, said Linda Deinberg, a network administrator at Fujisawa Pharmaceuticals.

Users said they would be delighted to have some sort of concurrent use policy, also known as metering, for Wordperfect. In such a scheme, a preset number of users on a network would use the product, after which a counting mechanism would bar any would-be extras from jumping on board [CW, July 15].

Deinberg said one of her main frustrations with Wordperfect is that it is difficult to control access to the product. "There's no control mechanism within Wordperfect like there is within Para-

dox and some of the other programs," she said.

Johnson said his biggest problem stemmed from his laptop users, who needed Wordperfect while traveling but also used it on their office machines. To obey the law, they must maintain two copies, he said.

Orem, Utah-based Wordperfect stands by its policy of requiring a license for every copy of its product in a business.

"From our standpoint, we think that the only thing that makes sense is to live within the four corners of the Copyright Act," said R. Duff Thompson, Wordperfect vice president and general counsel. "It doesn't deal with users or with any other form of licensing... We just simply say that if there's a copy, there has to be a license," he explained, excluding such excep-

tions as an archival copy or temporary copies necessary to use Wordperfect.

Some observers said Wordperfect is not as far out in left field as users would have you believe. "Things that are used more sporadically could be shared, but to talk about sharing a word processor doesn't seem fair," said Jeffrey Tarter, editor of the Watertown, Mass.-based newsletter, "Softletter."

"The fact is, most people will use word processing 80% of the time. There comes a point where concurrent use really is just a way of nibbling away at the price of the product," Tarter said.

This is not the first time this issue has come up. Last March, the market leader reiterated its policy in the face of what it called widespread misunderstanding and abuse [CW, March 11].

On Technology celebrates with 2.0

BY PATRICIA KEEFE
CW STAFF

CAMBRIDGE, Mass. — On Technology Corp. is celebrating the first anniversary of its On Location file and data finder tool with the delivery of Release 2.0, which features full compatibility with Apple Computer, Inc.'s System 7.0 Finder, including support for the standard Macintosh graphical user interface (GUI).

The current version of On Location also works with System 7.0 — if the user turns off the background indexing. As for the GUI support, "Before, we [just] fell within the user interface guidelines due to some customizing we did," said John Shagoury, On Technology's vice president of marketing and sales.

It turned out that while 80% of the users did not care, 10% hated the customized additions. "And some of those were in big accounts," he added — hence the change.

Key additions to On Location 2.0, which is slated to ship this quarter, include searching for numbers in files vs. just text, searching with AND or OR, printing and copying the file list, significant interface refinements and user-defined timing for background indexing. This last feature simply means users can preset when and how many times a day databases are updated, according to Shagoury.

Also provided is an XTND file translator to view files created by On Technology's Instant Update, which reportedly runs over Macintosh networks to help us-

ers communicate through "live" documents.

A developer's kit will enable developers to incorporate hooks for On Location's searching and indexing capabilities into their own applications.

Through enhancements to the code, Shagoury said, On Technology was able to increase the speed. He did not provide benchmark numbers.

"My associates here at the office didn't see any way that you could make On Location any faster than the version that they are using, but when they got a glance at the search speed of the alpha version,

their knees buckled," said Greg Phillips, president of Professional Support Network, Inc., a San Francisco-based provider of Macintosh support service.

On Location is also used by Apple's Integrated Systems Group in a product called the Customer Support Network. On Location is used as the search engine in the front end of a support package that allows large accounts to search through reams of information collected in an Apple database for entries related to the kind of problem they are trying to resolve.

Shagoury declined to give sales figures but said the firm is shipping "well into the

five figures worldwide" each month.

On Location 2.0 costs \$129.95. Registered 1.0 users can upgrade for \$25, unless they bought the package on or after July 29, in which case the upgrade is free.

It has been a busy 19 months for On Technology. Meeting Maker, which just shipped in March, is doing very well, according to Shagoury, who declined to provide unit shipment numbers. The firm followed this up in June with the release of Instant Update, groupware for collaborative applications.

On Location was designed for use by stand-alone users, who can use it to index volumes on servers, while Meeting Maker, which competes with Microsoft Corp.'s Schedule Plus, and Instant Update are targeted at work groups.

QUESTIONS:

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Truce

CONTINUED FROM PAGE 29

that] they bought an expensive and overpriced developer's kit from Microsoft, and now they can't get any support, and they can't do anything about it." Reports that Microsoft is now saying it will not bother to put the OS/2 application programming interface into New Technology further fuel this anger.

Developers primarily bought the tool kit to get the 32-bit compiler, said Basil Maloney, director of the Windows/Presentation Manager Association, which represents developers of both platforms.

Then there are those developers that think they were duped, Maloney said. It has been difficult to recoup the cost of any of the OS/2 developer's kits or applications development costs because the OS/2 market has not taken off.

There are a "ton of small developers" that are really broke right now, Berst agreed. They made their OS/2 product and spent advertising dollars but cannot make their numbers. Many are starting to feel the heat from resellers and distributors, he added. As a result, some of these developers are plenty angry, Berst said.

"My biggest complaint is the overall question being raised through the industry about the future of OS/2," Rosenberry said. As a small developer, he has made a substantial investment in OS/2, and he expressed anger that Microsoft would "raise this whole mess and cloud the issue about whether they will support OS/2 in the end and whether my investment will be worth anything in the end."

PS/2 L40SX unites size, speed and strength

Technology Analysis — A roundup of expert opinions about new products. Summaries written by freelance writer Suzanne Weixel.

IBM's Personal System/2 L40SX provides high-quality features that make it worth considering despite its high price, according to reviewers.

Performance: Fast and powerful, the notebook comes with a 20-MHz CPU and a 60M-byte hard drive. Users can install up to 18M bytes of random-access memory.

Ease of use: The PS/2 L40SX's crowning glory is its full-size keyboard. The 10-in. diagonal Video Graphics Array (VGA) display, however, creates some problems. According to *PC Magazine*, the display suffers from blotching and ghosting when configured in its default page-white mode.

Power supply: At full power, the battery life is about two hours. An additional battery (\$129) and a quick charger (\$219) are available.

Design: The notebook weighs 7.7 pounds and is 2.1 by 12.8 by 10.6 in. in size. The design is solid but not clunky.

Value: The PS/2 L40SX is loaded, but ease of use is hampered by the short battery life and less than ideal display. Still, users get a lot for their money.

The PS/2 L40SX costs \$5,245.

IBM's PS/2 L40SX

Reviews	Performance	Ease of use	Power supply	Design	Value	Overall
<i>Infoworld</i> 4/15/91	Expandable	Pleasant keyboard	Needs backup supply	Superior ergonomics	Expensive	Capable, not awe-inspiring
<i>PC Magazine</i> 8/91	NC	Excellent keyboard	Short battery life	A bit too large for a notebook	NC	Fares poorly overall
<i>PC Week</i> 5/3/91	Satisfactory	Satisfactory	Needs improvement	Good	NC	Traditional IBM machine
<i>PC World</i> 5/91	Speeds through big applications	World's best notebook keyboard	Not impressive	On the heavy side	Reasonable price	Looks like a winner
Users						
Ron Jenks, Deloitte & Touche	■	■	■	■	■	Nice keyboard, short battery life
James Metzler, Gaines, Emhoff, Metzler & Kriner	■	■	■	■	■	It's great
Analysts						
George Thompson, Datapro Research Corp.	■	■	■	■	■	Big but light
Morton D. Sinkoff, Laptopic	■	■	■	■	■	Upscale machine
Jeremiah Caron, Faulkner Technical Reports	■	■	■	■	■	Big, loaded; price to match

Key: ■ Very good ■ Good ■ Fair ■ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Vendor financial ratings

Analysts	Long-term stability	Short-term performance
Craig Kniff, Edward T. Jones and Co.	■	■
Wendy Abramowitz, Argus Research Corp.	■	■

IBM reported 1991 second-quarter profits of \$114 million, compared to \$1.4 billion last year. Revenues were down from \$16.5 billion to \$14.7 billion. Ratings based on telephone survey of analysts who follow the company.

IBM responds

Bob Lawten, manager of portable systems:

Ease of use: Typically, supertwist VGA displays have shadowing and streaking, and it is more obvious on larger black-and-white displays. A smaller blue-on-white display would be less readable.

Power supply: There is a built-in utility as well as two batch files that let the customer optimize the power management capabilities.

Large but light T2000SX a power contender

Toshiba's T2000SX

Reviews	Performance	Ease of use	Power supply	Design	Value	Overall
<i>Byte</i> 6/91	Best performer	First-rate keyboard	Long lasting	Minor problems with port covers	Not cheap	A winner
<i>Infoworld</i> 4/15/91	Very good	Good	Good	Very good	Very good	7.4*
<i>PC Computing</i> 8/91	Limited capacity	Good screen but small	Innovative	NC	NC	Behind leading edge
<i>PC Magazine</i> 8/91	A bit confining	Excellent keyboard	Pioneering battery	Hefty	Priced higher than average	Editor's choice
Users						
Robert Kalipetes, Citibank N.A.	■	■	■	■	■	Well-designed but no mouse port
James Metzler, Gaines, Emhoff, Metzler & Kriner	■	■	■	■	■	Inadequate power supply
Analysts						
Jeremiah Caron, Faulkner Technical Reports	■	■	■	■	■	Nice power management
Gene Talley, Promark Consulting	■	■	■	■	■	Good product, high price
Norman Weiner, Arthur D. Little, Inc.	■	■	■	■	■	Priced big

Key: ■ Very good ■ Good ■ Fair ■ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment. **Infoworld* ratings based on 1-to-10 scale

Vendor financial ratings

Analysts	Long-term stability	Short-term performance
Ross O'Brien, Pyramid Research, Inc.	■	■
Ciaran Flynn, Kidder, Peabody & Co.	■	■

Toshiba America Information Systems, Inc.'s Computer Systems Division is located in Irvine, Calif. Financial ratings based on telephone survey of analysts who follow the company.

Toshiba responds

Karen Reader, product manager:

Ease of use: LCD fonts are not necessarily pretty. There are third-party font enhancers available for customers who want to choose their own fonts.

Design: The serial port can be used for a mouse. There is a slot for an internal modem. It takes some effort to depress the power switch enough to turn off the system.

Experience shows in Toshiba America Information Systems, Inc.'s T2000SX notebook. Reviewers said the formidable battery and power-saving features boost this 16-MHz system to the top of its class.

Performance: The T2000SX has excellent speed. It comes standard with 1M byte of random-access memory, expandable to 9M bytes, and a 20M-byte hard drive.

Ease of use: The IBM Video Graphics Array, fluorescent, sidelit LCD is on the small side — 8.5-in. diagonal — and in text mode, *PC Magazine* said, it scans only 400 lines. The keyboard is comfortable, with well-placed keys, including full-size cursor-control keys.

Power supply: The nickel-hydrate battery lasts for about three hours in normal use and up to four hours if you use Toshiba's power management features. The autoresume lets users leave the unit for up to four days, come back and, within five seconds, pick up where they left off.

Design: At 6.9 pounds and about 12 by 10 by 2 in. in size, it is lighter and larger than other notebooks.

Value: Additional memory is too pricey, reviewers said, but overall, the T2000SX offers fine features and quality workmanship. It costs \$3,399 with a 20M-byte hard drive, \$3,749 with a 40M-byte hard drive and \$4,049 with a 60M-byte hard drive.

NEW PRODUCTS

Peripherals

C-Tech Electronics, Inc. has introduced the Prowriter CI-4, a four page/min. small footprint laser printer.

The 29-pound machine includes standard Hewlett-Packard Co. Laserjet emulation with support for 14 fonts. Resolution is 300 by 300 dot/in.

Optional memory modules raise the printer's random-access memory to 2.5M bytes.

The product costs \$1,245.

C-Tech Electronics
2515 McCabe Way
Irvine, Calif. 92713
(714) 833-1165

Brother International Corp. has begun shipping the HL-8V laser printer.

The product features three scalable fonts, data compression and high-resolution control to eliminate jagged printed edges. The company said that the HL-8V is fully compatible with the Hewlett-Packard Co. Laserjet III.

The printer is priced at \$2,495.

Brother International
200 Cottontail Lane
Somerset, N.J. 08875
(908) 356-8880



Brother International's HL-8V laser printer features Hewlett-Packard Co. Laserjet III compatibility

Philips Consumer Electronics Co. has designed a low-cost compact disc/read-only memory drive under the Magnavox label.

The Magnavox CDD50BK1 requires no external power supply and includes an IBM Personal Computer XT/AT bus interface card for connection to a PC.

The drive costs approximately \$400.

Philips Consumer Electronics
One Philips Drive
Knoxville, Tenn. 37914
(615) 521-4316

Development tools

Coromandel Industries, Inc. has introduced a data management system for use with Microsoft Corp.'s Visual Basic applications development environment.

Objecttrieve/VB allows users to develop applications for Microsoft's Windows 3.0 without the Windows Software Development Kit, the firm said.

Objecttrieve/VB comprises a set of dynamic link libraries and custom control (.VBX) files. It enables users to create databases from ASCII files, perform record search functions and build transaction-based applications, including BEGIN, COMMIT and ROLLBACK statements.

The product costs \$395.

Coromandel Industries
3rd Floor, 70-15 Austin St.
Forest Hills, N.Y. 11375
(718) 793-7963

Macintosh products

Adobe Systems, Inc. has released Adobe Photoshop 2.0 for Apple Computer, Inc.'s Macintosh systems.

It offers enhanced color separation and image-editing facilities and supports Pantone, Inc.'s Pantone Matching System with cyan, magenta, yellow and black.

Photoshop 2.0 costs \$895. Upgrades are available for \$149 until Aug. 31 and for \$199 thereafter.

Adobe Systems
1585 Charleston Road
Mountain View, Calif. 94039
(415) 961-4400

Software applications packages

Collage Plus Version 3.2 has been announced by Inner Media, Inc.

Collage Plus is a screen capture and image management software product for DOS and Microsoft Corp. Windows 3.0 environments. The new release adds the ability to capture pull-down Windows menus. Users can also save images to the Windows clipboard and read on-line documentation through Windows Help.

The product is priced at \$129.

Inner Media
60 Plain Road
Hollis, N.H. 03049
(603) 465-3216

Data storage

Practical Computer Technologies, Inc. has begun shipping the Practidisk ED 3½-in. super floppy drive and controller.

The subsystem contains a BIOS chip, allowing it to operate as an auxiliary controller alongside a personal computer's existing floppy drive and controller.

The Practidisk ED supports the IBM extra-high density (ED) standard for 2.88M-byte floppy disks.

An internal subsystem costs \$479. An external version costs \$589.

Practical Computer Technologies
5405-B Port Royal Road
Springfield, Va. 22151
(703) 321-3003

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story fame SX.

IBM brings its mastery of i386™ SX to a variety of new models.



When it comes to 386 SX technology, IBM just about wrote the book. Right from the start, the IBM PS/2® Model 55 SX hit the bestseller list, making it the leading 386 SX machine. And now IBM is opening a whole new chapter with 20 MHz models specifically designed to be more flexible and expandable.

The Personal System/2® Model 57 SX brings new levels of value to a Micro Channel™ PS/2, providing data integrity and increased performance in connected and multitasking environments. It comes with a new generation 2.88MB diskette drive and SCSI on the planar. The popular 55 SX has also been upgraded. It offers affordable Micro Channel performance, now with 4MB RAM and 40 or 80MB hardfiles. And our two newest AT-bus PS/2s deliver powerful performance at practical prices. The 40 SX offers full desktop expandability while the 35 SX packs its power into a smaller footprint. And with 132-column screen support, a new 122-key keyboard and IBM software, all new models can also run existing mainframe host terminal applications.

IBM also has new ways to improve PS/2 performance, starting with a new, faster, more user-friendly DOS 5.0. It requires less memory, yet offers advanced functions like built-in task switching and a full screen editor.* The new PS/2 3.5" Rewritable Optical Drive offers 127MB media capacity with a 66-millisecond average seek time, and the new Model 8504 12" monochrome display lets you view it all with high resolution and clarity.

To get the full story, including our "PC Trade-In Offer," contact your IBM Authorized Remarketer or IBM marketing representative. For a remarketer near you, call 1 800 272-3438, ext. 386.



Models 35, 40 and 57 SX feature i386 SX 20 MHz processors, 16-bit VGA and 5.25" internal drive capability. 80/160MB hardfiles are available on the 57 SX; 40/80MB on the 40 SX and 35 SX. Memory is upgradable to 16MB with 4MB standard on the 57 SX, 2MB on the 35 SX and 40 SX. The 40 SX and 57 SX each have five expansion slots and four DASD bays; three slots and two bays on the 35 SX. A medialess 35 SX LAN station model is also available with a Token-Ring Adapter standard.



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NETWORKING

NETWORK SHORTS

Make gets STM deal

Make Systems, Inc., a vendor of enterprisewide network management applications, said last week that it will support Adaptive Corp.'s broadband Sonet Transmission Manager in its Netool management decision support system.

The **National Institute of Standards and Technology** recently accredited several laboratories to test products for Government Open Systems Interconnect Profile conformance: Bull HN Conformance Test Center, Phoenix; CDA, Inc., Vienna, Va.; Control Data Corp., Arden Hills, Minn.; Corporation for Open Systems International Testing Center, McLean, Va.; Digital Equipment Corp., Littleton, Mass.; Hewlett-Packard OSI Conformance Testing Center, Cupertino, Calif.; IBM-OSI Lower Layer Conformance Center, Research Triangle Park, N.C.; and National Computing Centre Ltd., Manchester, England.

Under a marketing alliance with **Microsoft Corp.**, network integrator **Data Systems Network Corp.** has been authorized as a Microsoft Network Specialist and as a Microsoft University Advanced Network Training Center.

IBM tightens POMS backing

Equity stake girds commitment to OS/2-based manufacturing software

BY ELISABETH HORWITT
CW STAFF

RESTON, Va. — Seven months after obtaining exclusive marketing rights to Process Operations Management System (POMS), IBM has further strengthened its stake in OS/2-based software by purchasing a minority stake in developer Incode Corp.

In addition to reinforcing IBM's strategic commitment to POMS, the equity purchase will give Incode "additional capital for more aggressive development" in key areas such as graphics-based decision support tools, Incode President Curtis Grina said.

POMS targets the growing number of process manufacturers that want closer integration between their host-based planning and scheduling systems and the factory-floor devices that actually control and monitor the process, according to Bruce Richardson, a vice president at Advanced Manufacturing Research, Inc. in Cambridge, Mass.

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ISDN players move to meet deadline

BY JOANIE M. WEXLER
CW STAFF

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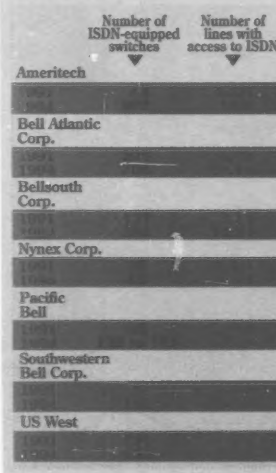
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To that end, a follow-up, hands-on meeting of CPE and switch vendors is being planned for the fall, a Bellcore representative said.

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Source: Bell Communications Research, Inc.

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This situation has "held the cost of ISDN CPE artificially high," said Stone, who chaired a workshop on ISDN

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Continued on page 43

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and versatile, allowing you to develop unique project paths firmly rooted in an IE baseline. And, using a CASE tool, it can be customized to suit your organization—or specific project. What's more, you can overlay your current methodology atop ForeSight to get CASE in gear—fast.

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NETWORKING

NETWORK SHORTS

Make gets STM deal

Make Systems, Inc., a vendor of enterprisewide network management applications, said last week that it will support Adaptive Corp.'s broadband Sonet Transmission Manager in its Netool management decision support system.

The **National Institute of Standards and Technology** recently accredited several laboratories to test products for Government Open Systems Interconnect Profile conformance: Bull HN Conformance Test Center, Phoenix; CDA, Inc., Vienna, Va.; Control Data Corp., Arden Hills, Minn.; Corporation for Open Systems International Testing Center, McLean, Va.; Digital Equipment Corp., Littleton, Mass.; Hewlett-Packard OSI Conformance Testing Center, Cupertino, Calif.; IBM-OSI Lower Layer Conformance Center, Research Triangle Park, N.C.; and National Computing Centre Ltd., Manchester, England.

Under a marketing alliance with **Microsoft Corp.**, network integrator **Data Systems Network Corp.** has been authorized as a Microsoft Network Specialist and as a Microsoft University Advanced Network Training Center.

IBM tightens POMS backing

Equity stake girds commitment to OS/2-based manufacturing software

BY ELISABETH HORWITT
CW STAFF

RESTON, Va. — Seven months after obtaining exclusive marketing rights to Process Operations Management System (POMS), IBM has further strengthened its stake in OS/2-based software by purchasing a minority stake in developer Incode Corp.

In addition to reinforcing IBM's strategic commitment to POMS, the equity purchase will give Incode "additional capital for more aggressive development" in key areas such as graphics-based decision support tools, Incode President Curtis Grina said.

POMS targets the growing number of process manufacturers that want closer integration between their host-based planning and scheduling systems and the factory-floor devices that actually control and monitor the process, according to Bruce Richardson, a vice president at Advanced Manufacturing Research, Inc. in Cambridge, Mass.

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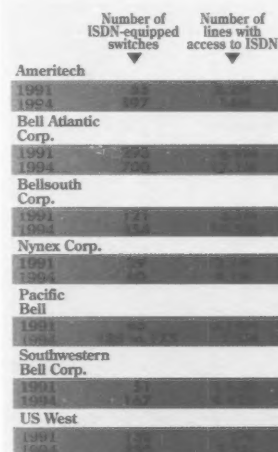
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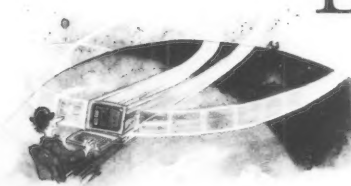
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Internet Society to guide research net

BY GARY H. ANTHERS
CW STAFF

RESTON, Va. — The 3 million-user Internet is finally getting its very own user group.

The Internet Society, which announced its formation in June, has already attracted 500 members, and acting President Vinton Cerf said he expects that number to climb to 10,000 within three years. The society will absorb the existing Internet Activities Board (IAB), its two task forces and its 57 working groups — some 700 people in all.

"Our goal is to become the National Geographic Society of the communications world," Cerf said.

The Internet is a collage of interconnected, multiprotocol networks supporting international collaboration in research and education. Born as a U.S. Department of Defense research project in the 1970s, the Internet has exploded in recent years and now connects 350,000 host computers on 5,000 networks in 33 countries. Several terabytes of information move over it each month, most in the form of electronic mail and file transfers.

For years, the Internet was watched over by the IAB, an informal group of 12 or so volunteer communications experts who used whatever resources their employers were willing to kick in to help the Internet keep pace with growth in use and the march of technology.

Now, the size of the Internet, the growing commercial interest in it and its increasingly international reach demand something more formal, Cerf said. "The IAB was just sort of dangling. It had no legal standing and no funding."

The Internet Society will not operate the Internet; that will continue to be done by the various universities, federal agencies and commercial concerns that now

manage the various network components. It will provide assistance to those involved in the use, operation and evolution of the Internet.

The society will stimulate network research and help guide evolution of the Transmission Control Protocol/Internet Protocol suite and the integration of new protocols such as Open Systems Interconnect. It will convene annual meetings and workshops and will publish a newsletter. It may also use funds from dues, meetings and publications to support specific user services such as directory services or computer emergency response

teams, Cerf said.

Members will include voting individuals, who will pay \$70 annually in dues, nonvoting corporations paying \$10,000 per year and nonvoting nonprofit research and educational institutions at one-half the corporate rate.

The society faces a number of challenges as the Internet ties into the National Research and Education Network, a gigabit-plus-per-second network authorized by new federal legislation and now in the early stages of planning. As that evolution occurs, the Internet is increasingly attracting the attention of commercial in-

terests — which will eventually take over the government's role in managing and funding the Internet — and of commercial users, who are beginning to use the network alongside the traditional academic users [CW, Nov. 26, 1990].

"We used to be just a small band of people passionately interested in the Internet, but now we're seeing a large networking community involved," Cerf said. "We're not far along, but we are somewhere. This [gigabit network] is not pie in the sky."

The top priority for the Internet Society will be to ensure that the Internet's hardware and software components can handle the mushrooming traffic, which Cerf said could continue to grow at 10% per month indefinitely.

1975 Launched the first U.S. public data network. 1979 Built the first commercial private packet network. 1980 Introduced the first major public e-mail service.

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Network for the future

"By the year 2000, a significant fraction of what we know as Internet will be offered by for-profit telecommunications companies," said Internet Society Acting President Vinton Cerf. "There will be a major research and education infrastructure, but there will be significant participation by business, especially with respect to [electronic data interchange]."

"If that happens, ownership of Internet will have transformed from a collection of private backbone networks to public regional and backbone facilities and an enormous number of private nets, including residential facilities."

Houses may have tiny local-area networks tied into Internet, Cerf said. "An appliance might call a service organization and say, 'I need a filter change' or 'I have a circuit board going out.'"

1988 Sprint completes the only nationwide 100% digital fiber optic network. Sprint awarded 40% of FTS 2000 contract. 1989 World's first and largest privately-owned

Hospitals bypass traditional systems interface

BY ELLIS BOOKER
CW STAFF

PALATINE, Ill. — For especially bad fractures, surgeons sometimes wire a piece of metal between two bones.

A similarly no-nonsense approach to systems integration is being offered by Eagle Innovations, Inc., a small company that has invented a down-and-dirty way for a hospital to exchange data between dissimilar computer platforms and software.

Called Electronic Data Exchange (EDE), the personal computer-based system is placed between two or more sys-

tems. It emulates a variety of terminals and automatically transmits data between systems. As a proprietary operating system that sits on top of DOS, EDE can handle four terminal emulations and one DOS session simultaneously.

Best of all, EDE users said, the system bypasses the considerable time and expense of creating a traditional systems interface (\$20,000 to \$50,000, not including monthly maintenance charges). The software's Basic-like scripting language can be used to build an interface in hours or days rather than weeks or months.

"When I was hired in 1990, my primary objective was to interface lots of differ-

ent user departments," said Gary Burgess, a systems integration specialist at St. Joseph's Hospital in Atlanta.

Burgess was also directed to be "imaginative" about keeping costs down.

Deployed last June, EDE has fulfilled both requirements. The hospital currently has six interfaces in production and each day passes 10,000 transactions and \$30,000 worth of charges from an IBM-based patient care system to a local-area network system.

Tom Powers, director of information services at Children's Hospital of Philadelphia, is another satisfied customer.

"The obvious appeal of a system like

this is, you don't need to get permission from either vendor to connect them together."

Powers complained that with a traditional interface, "neither vendor wants to take responsibility" when the interface crashes. Children's Hospital currently has an EDE interface to a blood bank system, owns a prototype of another to a physician billing system and will use EDE to create at least two more key interfaces to a new patient records system now being installed.

However, Powers said he thinks the product is best for linking a number of smaller systems.

"When we see a proliferation of PC-based systems that support specific departmental computing," he said, "EDE is an excellent tool."

Protocol issues

But what about Health Level 7 (HL7), the emerging standard protocol for multivendor hospital environments? Both Powers and Burgess said HL7 offers much — when it is fully defined.

"I haven't seen a lot of opportunities to take advantage of HL7 compliance, at least with the vendors we use today," Powers said.

Burgess, meanwhile, said some vendors are charging a premium for an HL7 interface, an extra fee he can avoid by using the Eagle system.

Originally developed as a system for linking physician offices with hospital departments, according to Ted L. Abbott, company founder and president, EDE has been in production at several sites for over two years and claims 35 hospital clients to date.

The EDE software requires DOS 3.0 or later and supports the IBM PC XT, AT, Personal System/2 and clones.

ISDN

CONTINUED FROM PAGE 41

concept of ISDN "islands," as different vendors' central office switches have not been able to exchange ISDN traffic.

Stone said his company views ISDN — a wide-area technology long in the works that provides dial-up access to multiple services combined on one communications line — as "an opportunity to deliver some of our services to customers in a low-cost way."

He said First Chicago will continue to explore ISDN for desktop videoconferencing and work-at-home applications. However, "the cost of CPE is so high, you can't put it in all the places you want it," he said.

Dick Aloia, assistant vice president of network access technology at Bellcore, said would-be ISDN customers should be heartened that the forum featured for the first time cooperative efforts among all the necessary ISDN players: long-distance, local and independent telephone companies; equipment vendors; regulatory agency representatives; and users.

A variety of discussions focused on "making ISDN workable for the end user," he said. One topic, he said, was how to mask addressing, conversion and compatibility discrepancies when an ISDN customer communicates to a non-ISDN user. "Because of this forum, we now have all the ISDN parties in one boat and pulling on their oars together," he commented.

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transatlantic fiber optic cable completed. 1990 Sprint announces the first commercial video services to the Soviet Union. Sprint introduces first nationwide ISDN capabilities.

Network allows chemical databases

Scientists gain access to more than 100 databases through STN network

ON SITE

BY GARY H. ANTHES
CW STAFF

COLUMBUS, Ohio — The American Chemical Society (ACS) is stitching together two radically different computer environments in hopes of offering the best capabilities of each to thousands of networked users around the world.

The users are scientists who tap into more than 100 databases at ACS facilities here and at affiliated centers abroad. They range from small, specialized databases such as a 1,000-record file of German university

and undersea lines. STN is a non-profit joint venture of ACS' Chemical Abstracts Service (CAS) and government-sponsored organizations in Germany and Japan.

The muscle behind the database processing is provided by IBM 3090 and 3081 mainframes running MVS. Together, the two machines have 300M bytes of main memory and 400G-byte databases.

ACS also has a growing client/server Unix environment distributed across a multisegment local-area network spanning two buildings. It is driven by reduced instruction set computing servers from Sun Microsystems,

facilities. "We wanted an open systems environment supported by multiple vendors, and we felt a Unix environment would offer more flexibility than an MVS environment," Farmer said.

For operating efficiency, file servers on the LAN are backed up on one of the mainframes. Users pass files and some applications software between the MVS and Unix environments through two Sun 4/490 gateways.

A push for standards

Much IBM assembler code remains, but all applications are now written in C. For greater applications portability, Farmer said he is pushing all his hardware vendors toward compliance with national and international open systems standards.

Farmer has the unusual challenge of having to satisfy two sets of users, both large and highly educated. On the input side, 550 CAS chemists and other specialists sift through 10,000 technical journals for information that they then input into the databases. Scientists around the world use Messenger to access ACS' databases over the STN network. Messenger, an interactive command language developed by CAS, knows whether a requested database is in Columbus, Tokyo or Karlsruhe, and it can collect and combine data from different sites. "The user knows he's switching files but not that he's switching continents," Farmer said.

In the U.S., users access the network via Sprintnet, Tymnet or Compuserve or by dialing STN directly. The network backbone consists of AT&T and MCI Communications Corp. circuits.

Messenger also has a feature that allows a user who does not know the name of a chemical substance to input a drawing of

its molecular structure. The search software performs a pattern search and match, in somewhat the same way that fingerprints are identified.

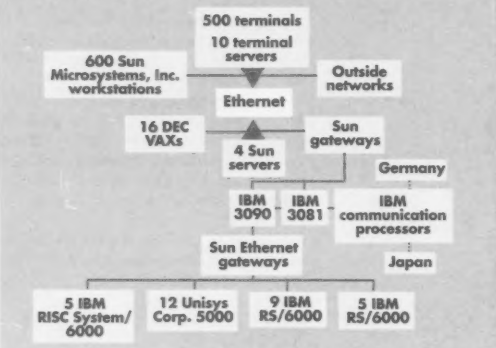
In Tokyo and Karlsruhe, searches are done on IBM mainframes. In Columbus, requests are edited and preprocessed on the IBM and then passed to the Unix environment. There, the major files have been split across multiple search engines with the chemical substances database, for example, residing on 12

Unisys 5000/95 servers. The databases are segmented by time, but they overlap so that every piece of data resides on two machines, guaranteeing availability if one goes down.

The parallel processing approach speeds searches. Farmer said a query of the very complex 10-plus-gigabyte substance file generally takes between 30 and 50 seconds to complete. Requests from the bibliographic file, also bigger than 10G bytes, take less than 10 seconds.

Right chemistry

The American Chemical Society's (ACS) network allows users to take varied paths to the ACS databases



CW Chart: Janell Genovese

research projects to an 11 million-record file of bibliographic references and an 11 million-entry dictionary of chemical substances.

The databases are accessed through STN International, a network linking Columbus, Tokyo and Karlsruhe, Germany, by multiple 56K bit/sec. terrestrial

Inc., Digital Equipment Corp., IBM and Unisys Corp. Almost 600 Sun Scalable Processor Architecture workstations and 500 dumb terminals are attached.

Nick Farmer, director of information systems, said the ACS set up its Unix environment in the mid-1970s to provide better user and software development

NEW PRODUCTS

Network management

BD Technologies, Inc. has developed Lancheck, an automatic monitoring tool for Novell, Inc. Netware networks.

Lancheck provides user-definable thresholds for traffic levels, disk space and other resources while monitoring network connections, I/O cards and other system hardware. The monitoring tool also notifies the systems administrator and logs all errors.

Pricing for Lancheck starts at \$349 for a single server with up to 100 users.

Prices range up to \$799 for eight servers that can have as

many as 100 users per server. BD Technologies Hampshire Center Route 311 Patterson, N.Y. 12563 (914) 878-8838

Local-area networking hardware

National Semiconductor Corp. has developed Etherfax, a local-area network-based fax server.

Etherfax works under Novell, Inc.'s Netware and manages fax communications for all users on the network. The product is Group III fax-compatible and handles transmission speeds of up to 9.6K bit/sec. Etherfax runs on a host personal computer

under DOS.

The LAN-based product costs \$995. National Semiconductor M/S 16.300 2900 Semiconductor Drive Santa Clara, Calif. 95052 (408) 721-5000

Ungermann-Bass, Inc. has announced a fault-tolerant power supply for use with its Access/One smart wiring hub.

The FTPS provides continuous redundant power to each module on the network. It can be monitored and managed through the firm's network management software.

The product costs \$6,998. Ungermann-Bass 3900 Freedom Circle Santa Clara, Calif. 95054 (408) 562-5602

LAN planning tools provide cost-effective prevention

BY JIM NASH
CW STAFF

A byte of prevention is worth a file of cure.

Prevention, in the form of personal computer-based network-design software, is becoming more prevalent and easier to use. Industry observers say increasingly sophisticated tools may help information systems managers ask "what-if" questions as they plan large-scale networks.

Network Design and Analysis Corp., based in Markham, Ontario, recently began shipping Autonet Version 2.0, software that automates many of the tedious tasks involved with network planning and design. The application helps draw the network and juggles cost estimates, including telephone tariffs.

In the revision, Network Design has incorporated support for Microsoft Corp.'s Windows. Indirectly, said Mike Labbe, senior telecommunications analyst at Thomson Financial Networks, supporting Windows has helped cut computing time by two-thirds.

Newton, Mass.-based Thomson, a division of Thomson International, runs the modern equivalent of a financial ticker tape service for 900 clients nationwide. Personal computers in each client's office link them to Thomson.

Changes made in minutes

Labbe said code revisions in the new Autonet version eliminate much of the redundant processing that previous versions of Autonet and other companies' products performed. Changes to Thomson's network can be made in five minutes, he said, compared with 15 minutes for Version 1.0 and 45 minutes for Connection Telecommunications, Inc.'s Multipoint Network Design System.

Using Windows also frees DOS' memory constraints, allowing Labbe to plug more individual sites into the cost equation.

Royal Bank of Canada in To-

ronto has used Autonet for two years, according to Mark Navickas, senior communications analyst. The bank, with a \$33 million budget for data transmissions, can now quickly design links between new and existing sites including branch offices and automatic teller machines. Autonet easily outpaces contracted design services that are host-based. Navickas said Autonet also shrinks the time needed to estimate operation costs of a new network connection "from maybe 15 minutes to a matter of seconds," he added.

Before installing the personal computer-based Autonet, Navickas said, he used a host-based U.S. service but found it slow, sometimes taking hours to crunch possible configurations. Worse, he said, it did not figure Canadian telephone tariffs.

Little planning seen

Even limited and inflexible systems, however, would be a step up for most companies contemplating additions to their networks, some observers said.

"It amazes me that [more companies] don't plan their networks," said John Green, a research scientist and network planning committee member at Chevron Research and Technology in Richmond, Calif. According to Green, even Chevron, which bristles with more network design committees than many other companies, often runs too quickly into networking projects.

He said Chevron recently went full-speed into building a new network link without much planning.

John DeArmon, an analyst at Dataquest, Inc. in San Jose, Calif., said most companies building or adding on to large networks do not know their networks could run more smoothly and cheaply with greater planning.

New planning tools, according to Dan Lynch, president of consulting and trade-show firm Interop, Inc. in San Jose, "are only just coming to the attention [of managers]."

MANAGER'S JOURNAL

EXECUTIVE TRACK



Alan G. Jones, the Unisys Corp. information systems executive credited with merging the internal systems of Burroughs Corp. and Sperry Corp. [CW, Nov. 14, 1988], has been named to the position of vice president and chief information officer at Tektronix, Inc. in Beaverton, Ore.

Jones, 44, moved from IS to a sales vice presidency at Unisys in 1989. He joined Sperry in 1974.

At Tektronix, he takes over CIO responsibilities from Chief Financial Officer Gary Arnold, who had been serving as acting CIO since the beginning of this year.



Elizabeth B. Vassar has been named senior vice president and CIO at Transamerica Life Cos. in Los Angeles.

She joined Transamerica Life in 1974 as a long-range planning analyst. Positions since then have included vice president of corporate systems and services, vice president of the Group Systems Division and vice president of the Ordinary and Agency Systems Division.

Before joining Transamerica, Vassar worked at Bendix Home Systems and Oxford Industries in Atlanta and at Blue Cross & Blue Shield of Florida in Jacksonville.

Vassar is a member of the Society for Information Management.



Raymond Raffety has been promoted to director of information services at real estate sales firm Century 21 of New England, Inc. in Burlington, Mass.

Raffety had been manager of information services for the past 18 months. Before that, he was an automation consultant at the firm.

He joined Century 21 in 1981 in a sales capacity and later worked at the former Century 21 Mortgage Corp. for two years.

Insuring success with patience

Met Life temporarily halts mini-to-PC conversion to review management prospects

BY SALLY CUSACK
CW STAFF

Metropolitan Life Insurance Co. believes an ounce of prevention is indeed worth a pound of cure. That is why its plans for one of the largest midrange-to-desktop system conversions in the U.S. today will be put on temporary hold as information systems executives, vendors and end users survey the existing transformation landscape.

Metropolitan Life is replacing 1,000 Bull HN Information Systems, Inc. DPS 6/40 minicomputers in the field with personal computer-based local-area networks.

Although the firm has smoothly completed the transformation of 50 of its larger offices from minicomputing to the PC LAN platforms, it has decided to take a break.

The biggest challenge is to determine how best to manage remote computing, according to Daniel J. Cavanagh, Metropolitan Life's senior vice president heading IS.

Many vendors, including IBM and Banyan Systems, Inc., can provide pieces to the remote management puzzle, but no one can offer a complete, deliverable solution today, Cavanagh says.

More importantly, Metropolitan Life has realized that downsizing involves much more than technology issues. Any major change like this de-

mands change in the organizational structure, something that Metropolitan Life wants to consider very carefully before proceeding with platform conversion.

Len Miller, Metropolitan Life's chief information officer for personal in-

formation systems, says Metropolitan Life be able to train users remotely from a central location, Miller says.

Cavanagh puts it bluntly: "We can't afford to have a technician at each office." He notes that several new and important factors are created by a PC-based environment.

"How do you know people on the LAN are backing and storing files properly?" Cavanagh asks. "How do you maintain security and discipline? We didn't have to worry about this with the minis."

When PCs are being used for individual processes, such as spreadsheet applications, they are the responsibility of the PC user.

However, when a PC is being used on a LAN as a business workstation, it becomes an entirely different matter. LANs are really not "personal" in any sense at all, Cavanagh says.

Zero-defect level

Another reason for the temporary pause in the hardware transition is to provide time to achieve what Cavanagh calls a "zero-defect level."

"This will give us time to see what needs improvement and what doesn't," he says, adding that this will also give the vendors time to perfect their management software tools for the server platform.

Miller mentions that it will also give the company time to evaluate the technology change.

Continued on page 48



Reinhold Spiegler
Metropolitan Life's Cavanagh, shown with the firm's most famous sales rep, preaches IS conservatism

urance and a leading force behind the sales office systems installation, says the object will be to manage the LANs remotely at the workstation level.

Because of the enormity of the organization, it is also important that Met-

ropolitan Life be able to train users remotely from a central location, Miller says.

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New IS rating tool: Peer review

BY JEAN S. BOZMAN
CW STAFF

What if your semi-annual job performance review turned into a kind of diving competition, with all your colleagues holding up cards that graded your performance? A 5 here, a 10 there and a 4 over there. And what if those grades were then passed on to your boss?

Something like that has started to take hold at a number of West Coast information systems operations, with "peers" at the top echelons of IS management giving feedback to each other prior to performance reviews. It is called peer reviews and sometimes really does include grading points.

"We want to find out how well every-

one is communicating with each other," said Wayne Horscroft, director of data management at Pacificorp, a Portland, Ore.-based utility.

At Pacificorp, the objective is for each of the firm's six IS directors to ensure that the level of services being provided by the other groups is adequate.

"We're a pretty blunt group with each other, even in our regular meetings," Horscroft said.

At Pacificare Health Systems, Inc., a Cypress, Calif.-based health maintenance organization, peer reviews are provided in the form of written comments from the 15 IS directors.

"It tends to give you a much better perspective on how you're doing," said Richard Kisilowski, vice president of information services, who still handles the final performance evaluations. "If

the directors don't get along, if they have their own agendas, they'll never be able to work together."

The program caused some initial hesitancy when it was introduced a year ago, but positive results have overcome the fears. "Now, everybody knows what everyone else's management objectives are," Kisilowski said.

San Francisco-based Levi Strauss & Co. is well known for its innovative management policies but has not yet formally instituted peer reviews.

Nonetheless, Donna Rund, director of information engineering at Levi's, is a strong believer in managers receiving feedback from different levels.

"The more you move toward an empowered organization, the more the feedback from all levels should begin to look alike," Rund said. "You would not be dealing with your subordinates much differently than you would with your peers."



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Bank considers outsourcing

BY MICHAEL FITZGERALD
COW STAFF

CHICAGO — John Gigerich, Continental Bank Corp.'s chief information officer, came to the bank in January 1988 with big plans. This year, however, he may decide to cut himself out of the picture in what will possibly be the biggest banking outsourcing deal of the year.

Later this month, Continental will receive various proposals from outsourcing vendors, according to a source at the bank. In the extreme, Gigerich could decide to eliminate his own position and outsource the operation of the entire 450-member information systems staff.

The source said the bank was open to any possibility, ranging from that extreme to one in which just pieces of the bank's IS work are outsourced.

Gigerich kept this possibility on the back burner as he developed his Vision for Information Systems Technology Architecture, or VISTA, plan for Conti-

nental [CW, Aug. 13, 1990], according to observers, and he has pushed it forward now because the time is right.

"It was never discussed openly because of internal sensitivities at the bank, but it was never



David Joel
Continental's Gigerich holds in his hands the decision to make the year's largest bank outsourcing deal

ruled out as an option," said Stewart A. Richards, a former Nolan, Norton & Co. consultant who worked with Continental on designing its restructuring plan.

Richards is now partner in charge of information technology strategy at Coopers & Lybrand's Management Consulting Services in Boston.

Richards pointed out that out-

sourcing fits in with Continental Chairman Thomas Theobald's strategy of focusing Continental entirely on corporate banking. To date, the bank has hired outside companies to handle tasks ranging from its legal work to managing its cafeteria.

Among the outsourcing vendors that will submit proposals are Andersen Consulting, IBM, Electronic Data Systems Corp. and the newly formed outsourcing group at Ernst & Young. The middle of this month is the deadline for the proposals, and Continental said it expects to make a choice shortly after Labor Day.

William C. Murschel, a spokesman for the bank, confirmed that Continental was soliciting outsourcing bids from a number of companies.

If Continental decides to outsource a large part or all of IS, it could be the largest outsourcing contract in banking since the \$450 million pact First Fidelity Bancorp. signed with EDS last year [CW, Sept. 3, 1990], according to sources at Continental.

months before the major components of that technology are completed and on the shelf.

Cavanagh is perhaps not quite as pessimistic. He and his staff have been meeting frequently with vendors, and based on their input, Cavanagh says he anticipates the project to commence again in a relatively short period of time.

He says he hopes to convert

I DON'T KNOW
how one can use the term 'downsizing' when the PC LANs are more powerful than the minis they are replacing."

DANIEL J. CAVANAGH
METROPOLITAN LIFE

another 50 large field sites onto the PC platforms before the end of the year.

Metropolitan Life, however, wants to avoid quick-fix, customized solutions, which could hinder the open architecture framework of the new PC LAN-based architecture, Cavanagh says.

Deliberately brushing aside a favored industry buzzword, Cavanagh dismisses "downsizing" as a term most often applied inappropriately.

"I don't know how one can use the term 'downsizing' when the PC LANs are more powerful than the minis they are replac-

ing," he says. "We are giving the people in the field more power and capacity than they have ever had before."

Cavanagh says he has been satisfied with the field performance of the minicomputers installed throughout the organization.

However, as the midrange systems were eclipsed by newer, cheaper and more powerful technology, it no longer made sense to add memory upgrades to 10-year-old machines.

The existing PC LAN configurations typically consist of several PCs connected to an NCR Corp. server carrying a Bull label under an OEM agreement.

All of the systems currently

MANAGEMENT SHORTS

Call for Unix skills rises

Many information systems jobs in the financial services industry have become victims of recessionary cutbacks, but one leading placement firm reports an "explosion in demand" for job candidates with workstation expertise.

Richard Wonder, national director of the IS division at Robert Half International, Inc., said the financial industry is showing unprecedented demand for candidates offering skills in Unix, Sparcstation-based development, object-oriented programming and relational database management systems.

"On the other hand, if I were a batch Cobol programmer, I'd be nervous," Wonder said. He also noted that Robert Half has seen a huge surge in demand for temporary IS job postings from Resolution Trust Corp. as it takes over the IS operations of failed savings and loans.

The end-user computing revolution has not diminished the need for or popularity of programmers and systems analysts, according to a survey by three researchers at West Georgia College in Carrollton, Ga.

The survey, sponsored by the Cleveland-based Associa-

tion for Systems Management, polled 1,092 alumni of undergraduate IS programs in U.S. colleges and universities on what IS jobs they hold. Forty percent said they are analysts or programmers.

"The results show that programmers are not dinosaurs in today's IS environment," said researcher Catherine M. Beise. "However, the rise in end-user computing and user-developed applications is changing the nature of the programmer's job."

The results indicated that skills such as problem solving and communicating with users are becoming more important than specific programming language skills that can be taught in company training programs, Beise said.

The Association of Records Managers and Administrators, Inc. has issued a call for papers for its 37th annual conference to be held Oct. 19-22, 1992, in Detroit. The conference theme is "Shaping the Information Age." The deadline for submissions is Oct. 31.

Proposals should be sent to Program Chairwoman Joyce W. Ellis, A. H. Robins Co., P.O. Box 26609, Richmond, Va. 23261, (804) 257-2794.

run DOS. All of the midrange systems run software developed in-house for a variety of applications. The PC LAN-based systems will be used for all sales office applications, including both in-house and external PC software.

In addition to the Bull minicomputers, Metropolitan Life houses six IBM 3090-class mainframes for heavy-duty computing at four computer centers across the country. The company also has some IBM Application System/400 machines installed at international sites.

Other questions Metropolitan Life executives are asking these days — along with much of the IS management community — concern the standard PC operating systems. Where is DOS going, where is OS/2 going, and in Metropolitan Life's case, how does Bull fit in with these strategies?

In keeping with its longstanding reputation for conservative investment (see story below), Metropolitan Life has apparently decided that DOS still has some good life in it and supports some good applications.

Playing it safe and smart

Metropolitan Life has done well at a time when many of its competitors are struggling with the balance sheet, with its total income increasing 17% to \$38.2 billion in 1990.

The IS department says it believes it has helped by mirroring the conservative corporate practices, such as sticking with its Bull HN minicomputers for the duration of their natural lifespan.

Senior Vice President Daniel J. Cavanagh says he does not rush in to test each new whiz-bang technology as it hits the street. The firm has installed an imaging system for medical claims forms processing and is piloting some expert systems, but these are targeted toward specific areas and are not intended to blanket the

entire corporation.

The IS chief says he has also tried to balance risk over the years and tends to stay away from a random "test this" and "try that" philosophy. He doesn't allow software into his IS department just because it is offered on a free trial basis — there must be good reason.

The company does encourage internal software developers to present the how-to's and results of their products to the rest of the Metropolitan Life systems community. This encourages systems development improvements while reducing maintenance costs, Cavanagh says. He adds that Metropolitan Life is very committed to in-house computer-aided software engineering methodologies.

SALLY CUSACK

Insuring

FROM PAGE 45

Given the rapid pace of technology development and changes in the marketplace, he says, the company wants to ensure that its "investment today will have value tomorrow."

Metropolitan Life plans to convert a wide variety of applications from minicomputers to LANs, including customer files, sales illustrations and management information.

Aside from the midrange obsolescence, a primary reason behind the conversion was to accommodate sales representatives using laptop computers, giving them a cohesive software environment both on the road and in the office.

Wise move

According to Theodore Klein, president of downsizing consultancy Boston Systems Group, Inc. in Boston, the IS executives at Metropolitan Life are prudent in their decision to call a temporary halt to the restructuring process.

"A lot of companies are proceeding willy-nilly into downsizing without giving adequate thought to the process," he says.

Klein also notes that companies must have adequate staff skills and experience to successfully implement such a project.

He agrees that remote management tools need to be more sophisticated. He estimates that it will be another six to 24

CALENDAR

Author and business consultant Tom Peters heads the speaker lineup for *CIO* magazine's Information Technology and the Corporate Agenda conference to be held Sept. 22-25 at the Hyatt Regency in Monterey, Calif.

The conference theme is "People, Productivity and Profit," and sessions include solving the workplace skills crisis, forging closer bonds with customers and employees and profiting from the open systems upheaval.

For more information or to register, contact Lynda Rosenthal, *CIO*, Framingham, Mass. (508) 935-4273.

SEPT. 1-7

Human Factors Society Annual Meeting. San Francisco, Sept. 2-6 — Contact: Human Factors Society, Irvine, Calif. (714) 752-7866.

Very Large Data Bases (VLDB). Barcelona, Spain, Sept. 3-6 — Contact: VLDB '91-Difusora de la Informatica, SA, Barcelona, Spain (011-34) 3-418-8067.

10th Annual International Conference on Enterprise-wide Information Management. St. Louis, Sept. 4-6 — Contact: Washington University Center for the Study of Data Processing, St. Louis, Mo. (314) 935-5380.

HD World. San Francisco, Sept. 4-6 — Contact: Meckler Conference Management, Westport, Conn. (203) 226-6967.

Unix Open Solutions '91. San Jose, Calif., Sept. 4-6 — Contact: Unix Open Solutions '91, Needham, Mass. (617) 449-8938.

Print '91. Chicago, Sept. 4-11 — Contact: Graphic Arts Show Co., Reston, Va. (703) 264-7200.

SEPT. 8-14

Development Center Institute Conference. San Diego, Sept. 8-11 — Contact: Development Center Institute, Inc., Indianapolis, Ind. (317) 846-2753.

Managing the Move to Workstation-Based Development — The Wave of the '90s. San Diego, Sept. 8-11 — Contact: Development Center Institute, Inc., Indianapolis, Ind. (317) 846-2753.

Telecon '91. Edmonton, Alberta, Sept. 8-12 — Contact: Canadian Business Telecommunications Alliance, Toronto, Ontario (416) 865-9993.

Software Development Week. Boston, Sept. 8-13 — Contact: Lisa Monson, Software Development Conference & Show Group, San Francisco, Calif. (415) 905-2414.

Disaster Recovery Symposium and Exposition. Atlanta, Sept. 9-11 — Contact: Disaster Recovery Journal, St. Louis, Mo. (314) 846-1001.

Symposium on the Computerization and Use of Materials Property Data. Cambridge, England, Sept. 9-11 — Contact: Teresa Cendrowska, ASTM, Philadelphia, Pa. (215) 299-5546.

Navy Micro '91. Virginia Beach, Va., Sept. 9-12 — Contact: Navy Micro '91, Norfolk, Va. (804) 444-8487.

Data Storage Interface & Technology Conference IX. Sunnyvale, Calif., Sept. 9-13 — Contact: Technology Forums, Minnetonka, Minn. (612) 934-1415.

Digital Equipment Computer User Society (DECUS) Europe Symposium. The Hague, Sept. 9-13 — Contact: DECUS Europe, Petit-Lancy, Switzerland (011-41) 22-709-4264.

Wireless & Mobile Communications III. Washington, D.C., Sept. 10-11 — Contact: Telecommunications Reports, Washington, D.C. (202) 842-0520.

Data Storage. San Jose, Calif., Sept. 10-12 — Contact: Forum Management, Cartledge and Associates, San Jose, Calif. (408) 554-6644.

Downsizing Expo. Los Angeles, Sept. 10-12 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

Government Neural Network Applications Workshop. Huntsville, Ala., Sept. 10-12 — Contact: Rene Kirkwood, U.S. Army Research Office, Research Triangle Park, N.C. (919) 549-0641.

Information Highways: Linking America for Interactive Communications. New York, Sept. 11-12 — Contact: Business Week Executive Programs, New York, N.Y. (212) 512-2184.

Aion User Conference. Monterey, Calif., Sept. 11-13 — Contact: Aion Corp., Palo Alto, Calif. (415) 328-9595.

ABCD: The Microcomputer Industry Association's Breakaway '91 Conference. Atlantic City, Sept. 11-13 — Contact: Deborah Keating, ABCD, Ridgeland, Miss. (601) 977-9033.

Software Publishers Association (SPA) Seventh Annual Conference. Orlando, Fla., Sept. 11-14 — Contact: SPA, Washington, D.C. (202) 452-1600.

SEPT. 15-21

International Electronics Packaging Society (IEPS) Conference. San Diego, Sept. 15-18 — Contact: William Ashman, IEPS, Wheaton, Ill. (708) 260-1044.

Data Administration Management Association International Symposium. Seattle, Sept. 16-17 — Contact: Bill Harenburg, Triadigm International, Los Angeles, Calif. (213) 622-0123.

Effective Methods for Information Systems Quality Assurance. Orlando, Fla., Sept. 16-18 — Contact: Quality Assurance Institute, Orlando, Fla. (407) 363-1111.

Federal Computer Conference. Washington, D.C., Sept. 17-19 — Contact: Technology Transfer Institute, Santa Monica, Calif. (213) 394-8305.

Auto-Tech '91. Detroit, Sept. 17-19 — Contact: Automotive Industry Action Group, Southfield, Mich. (313) 358-3570.

CASE Conference: Rebuilding for Software Automation with the 4 Rs of CASE. San Francisco, Sept. 17-19 — Contact: Extended Intelligence, Inc., Chicago, Ill. (312) 346-7090.

Strategic Planning for Information and Systems. Houston, Sept. 18-20 — Contact: Barnett Data Systems, Rockville, Md. (301) 762-1288.

Network and Distributed Systems Management '91. Washington, D.C., Sept. 18-20 — Contact: Technology Transfer Institute, Santa Monica, Calif. (213) 394-8305.

Working with Personal Computer Local Area Networks. Milwaukee, Sept. 18-20 — Contact: John T. Snedeker, University of Wisconsin at Milwaukee, Milwaukee, Wis. (414) 227-3120.

Acucobol Developers Conference. San Diego, Sept. 19-21 — Contact: Acucobol, Inc., San Diego, Calif. (619) 689-7220.

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CLIPS



Tim Lewis

Summaries from leading scientific and management journals

"Steering Through the Mist of Personal Computing: A Guide for Managers"

By Janis L. Gogan

Journal of Microcomputer Systems Management Spring 1991

■ A slew of articles describe information technology as a tool for giving businesses a competitive advantage, but they rarely mention personal computing in that context. Maybe that is because senior managers have only a foggy notion of the benefits of end-user computing.

General managers should understand that personal computing is not necessar-

ily "personal" because applications can go beyond individual productivity. They must also recognize that information systems professionals emphasize the risks related to personal computers while neglecting the opportunities.

General managers need to produce a balance between controlling risks and encouraging users to experiment with strategic applications. Then end-user computing will be able to play two key roles in attaining competitive advantage:

- Helping managers learn about information technology so that they can identify strategic applications.
- Helping managers quickly prototype new systems, which can be handed over to the IS department for full-scale development. — Mitch Betts

"MIS Management as an Attitude"

By Arthur E. Parry, Ph.D.

IMC Journal July/August 1991

■ The 1990s are bringing a change to information systems managers — not in a technical sense but in attitude. The attitude for the coming decade will likely allow IS managers to realize their true management potential. The changes will include the following:

- Accountability that goes beyond leading the staff and delegating responsibilities. IS managers want results from their teams, of which they are players.
- Scope of duties wherein IS managers will have to deal with all aspects of the organization where IS is concerned. The attitude will be "What can I do?" and not "Who else could do this?"
- Perception of responsibility so that IS managers have a positive opinion of themselves and their responsibilities.
- Single-mindedness of purpose: replacing the pronoun "we" with "I." IS managers must ask hypothetical questions such as "What must be done, and what should I be doing to accomplish this?" and "What should I do about deficiencies or excessive costs in our present systems?" — Stefanie McCann

"The Computerless Computer Company"

By Andrew S. Rappaport and Shmuel Halevi

Harvard Business Review July/August 1991

■ Computer companies should not build computers. Current steady supplies of personal computer and workstation hardware make it more strategically sound for firms to buy hardware parts and enhance computer systems rather than make them.

Furthermore, buyers want more than higher memory capacity or slightly faster disk access time. Specialized software and smooth integration of different software and hardware platforms are the keys to fat future profits.

Previously, computers were neither powerful nor cheap enough to effectively deliver applications envisioned for them. Now they have become too powerful for the uses to which they are being put.

Microsoft Corp. thrives because it works to fill the gap between what computers can do and what human imagination and software engineering are capable of making computers do. It makes software loaded with utility, but it also maintains its proprietary position and leverages rather than replicates huge investments made by less influential hardware companies.

Although Apple Computer, Inc. beat Microsoft in developing a graphics-oriented operating environment, Microsoft is the most powerful computer firm in the industry. This is because Apple defined itself as a hardware firm.

The Macintosh's most important advantage has always been its operating system: a software achievement whose technical virtues dwarf anything delivered by Microsoft. Had Apple funneled more time and energy into software, it would be a far larger and more powerful company today. — Kim S. Nash



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SPECIAL REPORT

PC'S 10TH ANNIVERSARY

Computing's Big Bang



EDITOR'S NOTE:

Aug. 12, 1981, came and went, but nothing would ever be the same again.

That day, IBM introduced the Personal Computer to a modest industry reception. The media mostly trivialized it as a "home computer" that might have niche applications in business. But in the past decade, the machine has become the most significant technology to hit the U.S. office since the telephone. It is debatable whether the billions of dollars spent on PCs have been paid back in productivity, but there is no doubt the machine has changed the way we work and live.

Today, we take for granted "what-if" spreadsheets, electronic mail and letters that can be edited with a few keystrokes. Millions of people who never thought they'd touch a computer now program in simple but powerful languages such as Lotus' 1-2-3 macro language. A software industry that barely existed in 1982 has become a \$6 billion market. Children play video games instead of pinball. Laptop computers have replaced the briefcase as the salesperson's calling card.

For better and for worse, there's no doubt the PC will be remembered as forever changing the world as we knew it just a short 10 years ago.

CONTENTS:

All walks of life: Notables from many fields talk about how the PC has changed the way they work.

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Scrapbook: Names, faces and media coverage of Aug. 12, 1981.

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The DP difference: For thousands of information systems professionals, life has never been the same.

PAGE 58-63

Then and now: The first MTV video, 23% tax cuts and houses averaging \$68,900.

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'What the PC means to me'

Doctor, author or magician, most professionals have spent a good number of hours at the keyboard of a PC. Here, notable representatives from eight professions comment on these machines, and their viewpoints are as different as their jobs. While some say the PC has helped them reach unprecedented goals, others worry about its long-term effects on the workplace.

Arthur C. Clarke, author and scientist

Computers have certainly revolutionized my life, and I'd like to pay a tribute by listing the machines that have come and gone through my office in the last 10 years.

Some of them, along with my original Hewlett-Packard 9100A "HAL Junior" are now in the computer museum at the Arthur Clarke Center for Modern Technologies.

Here they are: Archives 3, Apple II, Teleram, HP110, IBM PC, Kaypro II, Kaypro 1000, Kaypro 386SX, Sinclair QL, Sinclair Z88, Toshiba T1000SE, Toshiba T1600, Amiga 1000, Amiga 2000, Amiga 3000.

The Amiga is used for graphics, especially with the Mandelbrot Set from my latest book, called *The Ghost from*

the Grand Bank.

The others I use exclusively for word processing and cannot imagine

now that I ever wrote with a typewriter.

I have done only very elementary programming; my proudest achievement was writing a 10-line program in Basic language for *Wondrous Numbers* (see *Godel, Escher, Bach* by Douglas R. Hofstadter) that contained only 11 bugs.

I have dozens of wonderful programs from all over the place which I've never been able to look at. Because, alas, computers do not give more leisure time to authors. By removing the sheer drudgery of writing, they encourage them to work twice as hard — and produce five times as much. •



Dr. French Anderson, chief of the molecular hematology branch of the National Heart, Lung and Blood Institute at the National Institutes of Health

My first PC was one we made ourselves here back in the mid-'70s. The person who did it was the husband of one of my graduate students. This was pioneering in the sense that the computer division didn't like us doing things like that.

But I've been seriously using a PC for probably the last 10 years. I have Deskview so that I can toggle between three programs. The first is Lotus Agenda. In fact, the first gene therapy protocol was done on Lotus Agenda. The second program is Sidekick 2.0, where I keep a phone list with almost 1,000 entries. The third program is Wordperfect 5.1. We format the certificates of analysis for the Food and Drug Administration on the system and do all forms on it.

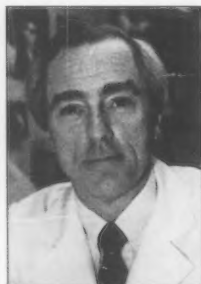
I use a variety of molecular biology programs for looking at protein structures, DNA structures, sequence alignments, restrictions and maps.

At home, I use a project manager called Instaplan. I outline a total gene therapy program broken into three-year segments, which keeps track of all the interrelations of all the programs we do here.

I'm not sure how PCs have affected medicine as a whole, but they've certainly affected molecular biology. You simply cannot do recombinant DNA work without a PC. For all the work with cloning, all the pulling out of sequences and comparing sequences with the Genbank — which is a major database with tens of thousands of sequences in it

— you can't do it by hand or by eye.

Other parts of this work we could do without computers, but it would take a lot longer. We would probably have been able to make the first human gene therapy transfer eventually anyway, but it certainly wouldn't have happened on Sept. 14, 1990. •



Ellen R. Gordon, president of Tootsie Roll Industries, Inc.

For me, it all began nine or 10 years ago, when 50 Fortune 100 companies were invited to a conference at a think tank in La Jolla, Calif. They decided to put 50 CEOs on a computer network.

We were supposed to answer a new question each week on the PC. It was really great — the spelling was terrible and the paragraphing was terrible, so you knew all these CEOs were doing it themselves.

It was the very beginning of Lotus' 1-2-3, because at one of the meetings, we all got together to discuss Lotus and its possibilities. That really started me off and got me very excited about it.

I immediately wanted a PC everywhere, in the office and at home.

But I held out getting one until we got a new computer at the office, our Sequent. That gave us the opportunity to go on-line and begin to play "what if." Now I've got a PC at home, in my country house and in the office. I'm on it all the time. I do all my personal ac-

counting, checking and tax work on the PC.

I can go in any time I want and see any category of expense — up-to-date — through the purchasing and accounts payable system. If I want to see all the legal fees we paid this month, I don't have to ask anybody to get a report. I just go on-line and get it myself.

I also insist on everyone in the company being on-line. This is a must. We don't tolerate "I don't know how to type" or "I've always had my typing done."

When we go to a conference, having a PC is invaluable because we meet with our customers and our selling agents, and there's no such thing as "the order is in the mail." We just pop it up to see if the order has come.

The PC's impact is clear. It's just going to become a bigger and bigger necessity. This is not something nice or pretty that makes us look good. This is truly a matter of survival. •



Lester Thurow, economist and dean of the Alfred Sloan School of Management at MIT

The first time I had the equivalent of a PC was when I spent 1979 working for *The New York Times* on their editorial board. They had just switched over to a computer printing system where you did everything on a Harris terminal, which was, at that time, perfectly compatible with the Lanier word processor.

I loved the word processor connected to *The New York Times* so much that when I left in the spring of 1980, I bought a Lanier. They cost a fortune, and everybody thought I was crazy. It was basically \$14,000 for a typewriter. Since then, I've had zillions of PCs.

The PC automated writing; it's made it so much easier to alter and change things. I'm not sure the product is better, but I suspect it is.

In academic circles, our current president at MIT loves electronic mail.

In the economics profession, on the other hand, the PC has not had a great influence. You can do a lot of statistics at your desk rather than having to put punch cards in at a central computer center. But ever since I've been a professional economist, economists have

had access to the computer centers at universities. So in that sense, the PC has decentralized the operation, but it didn't change the nature of the operation.

Unless you are a writer, though, PCs don't do much. There are more things of interest for children on PCs than for adults. Some of the games my children play on the computer I think are first-rate intellectual exercises, like computer chess. It's not just eye/hand coordination like Nintendo.

Part of the reason computers aren't used in general outside of the business or writing community is that the electronic highways to use them are not there. If I was hooked up to everyone and had a system that was simple to use, I could imagine paying my bills electronically rather than stamping envelopes and writing checks.

We're working on the electronic highways here at MIT, but it's a little bit like the telephone. The first telephone was useless because there was nobody to call. You need the whole world on the system before the system becomes useful. •



Teller, magician and comedian with partner Penn Jillette

I first used a PC in 1986 — a little Kaypro portable. It was very tiny and weighed about 1,000 pounds.

Today, Penn and I have five machines at our office, all IBM clones. A tremendous amount of information passes in and out of our office. We've set up a little interoffice communications network between ourselves and our assistant and others, like our backstage coordinator or one of our comedy writers. We also include a number of artistic or scientific/artistic movers and shakers, like Rob Pike of Bell Labs or Steve Strassman from the MIT Media Lab.

On this little in-house bulletin board, we can communicate business and artistic information, like ideas for new bits or problems with a bit, which is enormously helpful to us. It is very difficult to take criticism or absorb information and organize it if you are not in the mood, so we just leave messages for one another on our bulletin board, and then each of us picks them up at least once a day and scoops off the messages.

I know that's no revelation to the computer community, but it's an enormous revelation to the artistic community. People just don't realize that there are times when you can make yourself ready to listen to others.

At home, Penn has an Amiga and a Videotoaster [a box used for creating low-cost, production-quality videos], and I will, too, very soon. We hope to be an independent video production house, which I'm an enormous advocate of.

Somebody like Henry Miller — it

might have been Arthur Miller, one of those Miller cats — once said, "All the bravest work is going to be done by writers because all they need is a pencil and paper." I believe that the arrival of such things as the Videotoaster is going to be a landmark in making moving pictures an art form. People will be able to do really original stuff economically without huge overhead that demands that your art be subservient to someone else who is in control of your budget.

My home machine is a Sharp PC6200. You can imagine how luxurious it is to be able to be on tour with the show, log on to the office and find out what my schedule for the next few days is going to be. I can check in and see if we've gotten any calls from David Letterman lately.

We also have a machine called Moffo Ex Machina, which is our fan bulletin board. It's named for a gorilla in our

show called Moffo and Ex Machina as in "deus ex machina."

We're just getting the bulletin board into shape right now. Fans can log on and read interesting backstage stuff. It will eventually have tour schedules, upcoming appearances, things like that.

The PC has also made a huge difference in how enjoyable it is to write. The ability to manipulate text the way you would clay in sculpturing is vastly encouraging to a writer. It's one of my great puzzlements that the quality of writing in the world hasn't improved in line with the opportunity computers have given people to improve. •

**George Gilder, author of Microcosm, senior fellow at the Hudson Institute**

The chief change that PCs have brought about is that, today, *The Wall Street Journal* or *Forbes* can call me in Tyngham, Mass., in the Berkshires and ask for a story the next day, and I can deliver a story to them, edit it over the modem faster and better and more intimately than if I took a train to their office and sat at a desk next to the editor using a typewriter.

It's also just a tremendous piece of equipment for enhancing the power of individuals. I can define my own life and my own priorities much more easily.

In the past, the whole information economy was dominated by hierarchical structures, epitomized by the mainframe computers with thousands of dumb terminals attached. With the PC, each person is in control of his own computing and his own functioning. So it endows individuals with power

and reduces the power of hierarchical organizations.

The next step, the remaining hierarchy in place, is broadcast television. There are only 1,400 TV stations, they don't even have dumb terminals attached, and they have idiot boxes. The next decade will be the decade when the PC blows away television by once again replacing a hierarchy — where the individual is dependent on some remote elite — to a heterarchy, where individuals decide what they want to watch and when they want to watch it, anywhere in the world.

A lot of people think there will still be TVs in the year 2001. But each PC, or telecomputer as I'd call it, will be more powerful than a local broadcast station used to be. The overwhelming impact of the PC is to empower individuals against large organizations. •

**Gilbert Grosvenor, president and chairman of the National Geographic Society**

We use PCs for everything from communication between writers and photographers in the field to doing voluminous statistical reports on our membership file.

Like other publishers, we're deep into desktop publishing, doing our layout and designs on the Macintosh. It has clearly facilitated our editorial and business operations.

The flip side is that it has reduced interpersonal interaction. I have some problems with that. I want to sit down and talk to a manager one-on-one.

As far as the quality of the publication, the bottom line is that it still takes people to do layout, design and write text. What the PC has done is facilitate getting the message from the brain to the page. Has it improved the editorial product? No. The quality of our various magazines is still in the minds of the creators.

We haven't really touched on the use of PCs in their most exciting aspect, and that's in education.

This summer, we launched our first educational technology leadership forum, cosponsored by IBM, with the mission of teaching geography and social studies teachers how to become familiar and comfortable with computers and providing them with the ability to maximize the educational software we produce, working with Apple, IBM and



Lucasfilm [George Lucas' production company].

We also have a program called Kids Network. Kids initiate science projects in their own local schools and pump that information into a mainframe. They can pull up a national or global compendium of information.

All of this is useless, though, if the teachers aren't qualified. There will be a turnover of some 2 million teachers between now and the year 2000. It will be a tragedy if all of them are not comfortable using computers. •

Karen Nussbaum, director of 9to5, the Cleveland-based National Association of Working Women

In the office environment, use of the PC has played out just as we expected in a lot of ways. People in clerical jobs all had to become computer-literate. It became impossible to get a new job unless you knew the system in the company because there continued to be very little investment in training on the part of employers.

This resulted in a split. The higher level jobs were upgraded, but the low-level jobs became worse. For airline reservation clerks or anyone who works on a headset and a system, those jobs are just horrible. The health and safety problems are just outrageous. The pay has gone down for clerical workers in 10 years, in real terms.

You can't blame this on computers. I've been using PCs for four or five years, and we have about a dozen in the organization. This is not about the technology but management's decision about how to implement it.

I don't feel it's the computer vendors' responsibility, but I think that as artists who've created this wonderful technology, it would behoove them to say, "Wait, you're missing the beauty of this technology. Can we advise you how to use this technology better?"



There is also no organized, legitimate voice resisting the bad application of the technology. There were some voices from the work force, like 9to5, or unions, but you're still talking about 15% of office workers being in unions.

There is also the whole issue of computer monitoring, which allows management to follow a worker's performance in real time. The estimates are that 26 million workers are subject to electronic surveillance, and 10 million are evaluated based on monitoring.

We are the only western democracy that utilizes individual monitoring. Because of a narrow view on the part of management on what constitutes productivity and

satisfactory work, you have a love affair with counting and a passion for control. In the future, I don't think the PC will make things better or worse. It could go either way, depending on social forces. The PC could be a powerful tool in this endeavor, but American management has a unique ability to remain impervious to change. •

Glenn Rifkin, a free-lance writer and a former *Computerworld* features editor, conducted these interviews.

Confident IBM invades home computer market

Scrapbook: August 12, 1981

IBM unveils its personal computer: video games, 40 tunes and payrolls

WCBS New York, radio broadcast, Aug. 11, 1981

Reporter: IBM is expected to unveil its long-awaited personal computer tomorrow morning. Esther Dyson at Oppenheimer doesn't think IBM will end up controlling the market.

Esther Dyson: I don't think that it's going to wipe out Apple or Xerox or anybody; it's a large market.

Reporter: She also doesn't expect the personal computer to have a big impact on IBM stock. It will be a very small part of the IBM operation, but it could help the smaller companies, like Apple and Commodore and Tandy and the others, by convincing the public that if IBM has a personal computer, they must be more than just toys.

IBM Set to Announce Entry Into Home-Computer Field

Wall Street Journal, Aug. 11, 1981
"They'll sell these things by the thousands and thousands," predicts Thomas L. Crotty, an analyst with Gartner Group in Greenwich, Conn. "They'll use every channel — any distributor, mail order, Computerland retail stores and their own marketing force."

Commodore's President James Finke says he has heard speculation putting IBM's list prices anywhere from \$1,000 to \$10,000. "It's like the second coming," he says. "If one-tenth of what we hear is true, it will be wonderful."

"One of the biggest kicks I used to get when I worked at IBM — and I still get it today — is when you see a retailer running his business on a PC or see people in a golf shop recording their scores on PCs."

William Lowe

Will IBM become a household word?



► *Consumer Electronics Daily*, Aug. 25, 1981

"Welcome, IBM. Seriously." That's the headline on the full-page ad Apple Computer Corp. ran in *The Wall Street Journal* and *San Jose Mercury News* yesterday trading on publicity of the IBM intro into the personal computer market.

The full-page promo went on to "congratulate" IBM for unveiling the personal computer but stole some IBM thunder by noting midway, "When we [Apple] invented the first personal computer system ..."

A spokesman says the ad won't be repeated in the near future. "It's a once-only message," he says. "Our reason for running it is apparent. The ad speaks for itself."

"We absolutely bought the first two IBM PCs ever sold retail." (Alpert, who purchased the machines at Sears, has been making add-on boards for PCs and compatibles ever since. His company, Cumulus, even makes its own IBM PC compatible today). "It's basically a hobby that turned into an industry."

Marty Alpert
Chairman
Cumulus Corp.

◀ Promotional photo that IBM ran with the PC announcement

► *Chicago Sun-Times*, Aug. 13, 1981

"The profile for the computer is extremely broad," said [IBM's vice president for information systems, Ned C.] Lautenbach. "We see its use in the home, business, the professions, educational institutions and elsewhere. All kids today are learning on computers at school, and this provides the opportunity to bring the equipment for learning into the home."

When the IBM PC was introduced, "I felt pretty certain that it would dominate and lead the industry. From the very beginning I realized I would have to [come out with a clone]."

Adam Osbourne
Inventor of the CP/M-based
Osbourne Portable Computer

► *The Evening Press*, Aug. 13, 1981

IBM's announcement should dispel the image of the personal computer field as being all games and toys and establish it as a "for-real business," said Garland P. Asher, director of financial planning for Tandy Corp., commenting on the IBM announcement.

► *Datamation*, October 1981

IBM's name is close to synonymous with the word "computer" and as such will probably hold more weight with conservative and skeptical firms first looking at personal computing.

IBM's Personal Computer Paves New Corporate Path

Computerworld, Aug. 18, 1981
The giant of the computer industry is thinking small.

IBM last week announced its smallest system to date, a personal computer. In addition, the firm announced an untraditional marketing agreement with Sears, Roebuck and Co. and Computerland as distributors of the system, and the firm proclaimed it is looking to buy programs from anyone who will listen to it.

"In mid-1980, Armonk asked us to look at working with some other companies in microcomputing. The conclusion of our meeting was that we ought to consider building our own rather than working with someone else."

"That led to a two-week task force of about 12 people, which I led. When we came back to Armonk in early August, we proposed doing the PC as it came out. I've always thought it was kind of amazing that two weeks of work really did define the way we approached the business."

Then executive assistant to the president at IBM and currently president and chief operating officer of Gulfstream Aerospace Corp.



William Lowe



Jeanette Maher

"One thing I remember was at 1:30 or 2 a.m. [on the day of the announcement] looking at the Starlight Ballroom of the Waldorf-Astoria in New York. There was

Don Estridge tweaking his demonstration show. And he said, 'Do you think anybody is going to show up tomorrow?' And I said, 'I don't know ... it could be just you and me.' But sure enough, lots of people showed up."

Then manager of information in the IBM Systems Group and currently president of Maher & Associates

"As the market planner [for the IBM PC], I had to deal with the development side on one hand, selection of applications on the other, not to mention the head of the marketing team."

"I'll never forget one meeting in January that started at 8 a.m. and finished at 2 or 3 a.m. on Saturday. We went through the whole thing from manufacturing to the operating system, and at 1 a.m., someone said, 'When we enter the order ...' Someone else said, 'Enter the order where?'"

It was then that we realized that we didn't have an order entry system.

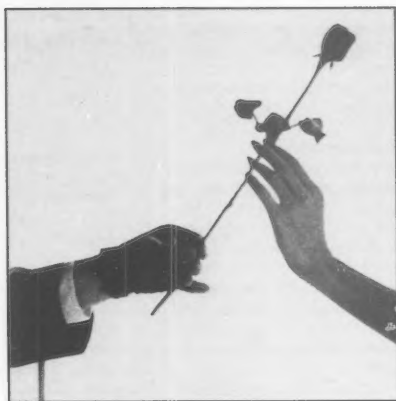
"So we had to acquire the equipment, get the programs and have it running by the time we announced it. We actually used very little of the IBM structures at the time. We had our own ordering systems, our own manufacturing process. We were starting a small business."

Then market planner for the IBM PC and currently director, product management, IBM desktop software



Larry Rojas

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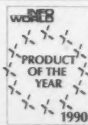
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Managing the aftermath

The PC has made the world a different place for IS departments. From programming to organization to vendor relations, here's a look at its dramatic impact

Orchestration skills needed

BY CAROL HILDEBRAND

When Ron Goldfarb wrestled his first IBM Personal Computer out of its box, he knew things were going to change around the office. What he didn't realize was how quickly that would happen: as soon as he threw away the wrappings.

Goldfarb, now in information systems management at Pratt & Whitney in East Hartford, Conn., says that his PC, like one in four of those first shipped, arrived DOA. On reading the fine print, he discovered he had to send it to Greencastle, Ind., for repairs — and in the original box. "We were out there in the dumpster digging for the pieces of styrofoam," he says. "To this day, we still save the boxes."

What came out of those boxes represented not only a revolution in the way computers were used in business but also a new job description for many IS managers. Suddenly, they faced the round peg/square hole syndrome: Their traditional methods did not fit the new situation.

"In the old days, you could just stay in your box," says Diane Coleman, director of MIS at Fleetguard, Inc., a Nashville manufacturing firm. Today's IS manager has to interact daily with a diverse group of people on a diverse set of issues.

"It is much harder to be an IS professional today than it was 10 years ago," says Norm Sanders, president of the executive search firm Norm Sanders Associates in Hazlet, N.J. "It is a quantum difference."

An IS manager is expected to be not only a solid technician but also part teacher, part diplomat and part businessperson. At Lithonia Lighting in Conyers, Ga., the IS department holds

classes on just about anything the company supports, and it also sponsors user support groups. These groups meet to discuss such things as procedural do's and don'ts, which can sometimes be a touchy subject, says Charles Darnell, manager of information technology.

"When we catch somebody with his hand in the cookie jar, we don't jump up and down and slap his hand," Darnell says. "We say, 'That's very clever, what you've done, but maybe you should be doing it this way.'"

Clear explanation vital

Darnell says they try to expound why the user should stick to a prescribed corporate method: "We're trying to empower them and teach them rather than running around with handcuffs."

A slightly different problem occurs when users get overly enthusiastic about the technology and start to think they know more than they actually do. That requires a different skill — namely, diplomacy.

Joe C. Harris Jr., director of information technology at NBC TV Stations in New York, is one manager who sees a little knowledge as a dangerous thing. Users may know enough to make short-term decisions as to what to purchase and what applications to develop, but that ultimately lands them in trouble, he says.

Keeping users out of trouble requires both patience and tact on the manager's part, Harris says. It really boils down to getting users to understand and agree on the long-term plans of IS.

The situation is especially tricky because while the expertise is in IS, the money is often in the user department.

"We can't tell the [user] department what's important," Goldfarb says. "It's up to them to decide whether they're

"When we catch somebody with his hand in the cookie jar, we don't jump up and down and slap his hand. We say, 'That's very clever, what you've done, but maybe you should be doing it this way.'"

Charles Darnell
Manager of
Information Technology
Lithonia Lighting



Chuck Rogers

going to spend their budget dollars. We just act as technical advisers."

Bob Klevin, president of Robert Klevin & Co., a Lexington, Mass.-based placement company, agrees, saying the role of the IS professional has become more consultative.

"One must be more of a problem solver — solving problems of a specialized, technological nature and problems that are company-specific."

Have to know the business

In order to give good advice, IS managers find they need to have a handle on the business side as well.

Managers "have to understand the impact of their work on an entire system and the entire company," says Allan Grossman, senior partner at the executive recruiting firm A. Davis Grant & Co. in Iselin, N.J.

Companies are "looking for people who understand how information technology can be used to a strategic business advantage," says Herb Halbrecht, president of the Stamford, Conn.-based executive search firm Halbrecht Associates, Inc.

This often means serving a stint in a business unit before rising to the ranks

of IS manager. Harris spent 10 years in news and another decade in sales before taking his current position at NBC. Doug Lewis, chief information officer at Pratt & Whitney, is an electrical engineer by training.

This doesn't mean managers no longer have to be technically astute. In fact, even the technical issues are more complex than they used to be.

"It's infinitely more difficult to keep up with what's going on in each of the little units," Darnell says. "Here, the data is spread out all over, and I'm supposed to be in charge of making sure that it's secure."

Although the old guard may look back to pre-PC times as a sort of lost Eden, the reality today is desktop computing. It may have brought uncertainty and change to the data center, but it has also forced IS management to grow up and learn to roll with the changes.

As Harris says, "Maybe the only way to push the envelope of exploring growth is to allow the chaos that is happening to happen." •

Hildebrand is a *Computerworld* staff writer.

Mark Fritz, a free-lance writer in Dedham, Mass., contributed to this report.



Steve Magraw

Soft skills

IS employees needed different qualities 10 years ago than they need today

THEN

- Ability to work independently
- Strong technical skills
- Ability to focus on specific tasks
- Ability to follow

NOW

- Ability to be a team player
- Ability to converse with businesspeople
- Ability to see the big picture
- Ability to lead
- Familiarity with international scene

Hard skills

Demand for technical skills has changed dramatically between 1981 and 1991

THEN

- Cobol, Fortran, assembler
- Conventional IMS and flat-file databases
- Specialized knowledge
- Mainframe security
- A degree in computer science

NOW

- CASE, C+, object-oriented languages
- SQL and relational databases
- General systems knowledge
- LAN security
- A degree in computer science and business

CW Chart: Doreen St. John

End-user liberation forces change in IS mind-set

BY LUCIE JUNEAU

When end users at Homefed Bank F.S.B. in San Diego need help with a new application or have trouble accessing a file, whom do they call? If you answered, "the information systems department," you're only partly right. Very often, they call one another.

It's not that Homefed users are particularly savvy. Rather, in the past decade, many users have learned not just computer jargon but also how to program applications and make hardware and software selections — overturning the traditional balance of the IS/end-user relationship.

"The user is in the driver's seat," says Mark Minasi, a partner at Moulton, Minasi & Co. When IS was the only department with computer expertise, it wielded monopoly control over the organization's technology strategy. Today's users no longer tolerate such heavy-handed leadership.

In many cases, says Alex Nedzel, a consultant at Ernst & Young's Center for Information Technology and Strategy, users have become IS people themselves, taking a role in the future computing direction of the company and making decisions that used to be IS' to make.

"As recently as five years ago, the future strategic direction of MIS was basically determined by the senior [information resource management] official of the Peace Corps and the IRM staff," says Stephen Rose, the director of communications and office automation services at the Peace Corps' headquarters

in Washington, D.C.

Today, IS plays only a supporting role at the Peace Corps. An IS advisory board — consisting of most of the power users within the Peace Corps — helps crystallize and define long-term IS directions. A senior advisory board then meets to determine final policy and implementation, Rose says.

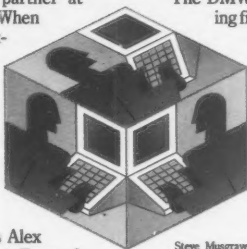
The new power structure in many corporations has forced IS departments to change their ways drastically. Most now realize that as long as ivory tower thinking prevails, there will be an endless series of IS/end-user confrontations — and possibly a loss of power.

In order to retain a key role in the company, many IS departments are starting to woo users with services, says Jeff Bruckner, a project director at The DMW Group, Inc., a consulting firm in Stratham, N.H.

One trend is for IS to move out of its glass house and into user territory, putting the department at the users' disposal. At Homefed Bank, IS personnel work in the bank's 15 information nodes, which include departments such as retail banking, marketing, public affairs and residential lending.

IS staff members are intimately familiar with the information and technology needs of users in their departments and are better able to respond to requests for help as they arise, says Edwin Nichols, chief information officer at Homefed Bank.

To increase service to its users around the country, Universal City, Calif.-based MCA, Inc., a division of Universal Studios, now operates a 24-hour help desk.



Steve Musgrave



Alan Levenson

IS staff members are intimately familiar with the information and technology needs of users in their departments and are better able to respond to requests for help as they arise.

Edwin Nichols
Chief Information Officer
Homefed Bank

If a terminal gets stuck in Memphis while a user is running a warehouse system or if a user in Gloversville, N.Y., has trouble printing a bar-coded label, the help desk will record the problem and either fix it over the phone or dispatch the appropriate person to fix it, says George Brenner, director of corporate information services at MCA.

As users grow more technical, it may seem that IS would grow less busy over time. In fact, the opposite is true.

Connecting new users is more of a challenge now that users have PCs, Brenner says. "Prior to PCs, you'd get a dumb terminal and plug one wire in," he says. Now, IS has to install monitors, network boards, modems and laser printers, he explains.

IS can also help users stay informed of resources outside of the organization that might help them do their jobs more effectively, says John Diebold, chairman of The Diebold Group, Inc., a consulting firm in Bedford Hills, N.Y.

The new relationship has also created some nice side benefits, such as diminishing backlogs of requests for reports and applications development projects.

However, the new partnership between end users and IS isn't always

ideal. IS managers complain that user awareness of central computing requirements and resources doesn't always keep pace with knowledge of PC procedures and applications.

Many PC users can't understand why things take so long on a mainframe. "Users get frustrated because IS doesn't work more quickly," says Paul Summer, MIS supervisor at Owens-Corning Fiberglas Corp. in Amarillo, Texas.

Insatiable user appetites for newer and better equipment and applications can sometimes rattle the IS staff, whose job it is to support products and ensure compatibility and interconnectivity.

Unfortunately for IS, these and other trouble spots only serve to highlight the degree to which they must continue to be accommodating.

"IS has become a lot more competitive," says Leslie Ball, a principal at CSC Index, Inc., a consulting firm in Cambridge, Mass. "They know that their lives are at stake, and they're working very, very hard to make sure that they're seen as a valuable contributor to the organization." •

Juneau is a free-lance writer and editor based in Salem, Mass.

PC payoffs

IS managers report approximate gains in IS productivity from PC-based methods over traditional approaches



	Productivity
Office automation, documentation, electronic mail	10%
Programming	5% - 15%
Remote systems fix	5 minutes (vs. 1 hour)
Multisession host connectivity	5% - 10%
CASE	15%

Source: Computerworld interviews
CW Chart: Doreen St. John

Programmer productivity: No giant leaps

BY ALAN RADDING

Information systems managers who have turned to personal computers in hopes of enhancing productivity are finding the gains quite modest.

Admittedly, very few people have actually calculated the degree to which PCs have increased programmer output and decreased computing costs. According to some educated guesses, however, the gains seldom rise above the 10% mark.

Using a programmer's PC workbench for developing applications can increase productivity by 5% to 10%, according to George DiNardo, adjunct professor of IS in the Carnegie Mellon University graduate program and former chief information officer at Mellon

Bank Corp. in Pittsburgh.

What's keeping that figure from rising, he says, is a lack of PC-based, IS-specific tools as well as the huge backlog of existing mainframe-developed code.

Just the same, says George Germain, national director of MIS at Ernst & Young in Lyndhurst, N.J., a company can reduce its mainframe applications development load by 50% or more by developing applications on a PC.

In other words, if a typical shop spends one-third of its mainframe CPU resources on applications development, it can cut CPU consumption to one-sixth or less by using PCs.

When organizations turn to computer-aided software engineering (CASE) for applications development, however, they enter a fuzzy area of projecting cost savings many years out.

Make that a five-year projection at Mitsubishi Motor Sales in Cypress, Calif. The company did a recent study identifying \$20 million worth of aging applications that they intend to redevelop within that time frame.

With CASE, says Esther Delurgio, director of IS, "We believe we can save \$3 million, or 15%, of that."

Of course, the gains will not be realized until late in the process, and the company must initially absorb the cost of training and other start-up expenses. "There won't be any immediate savings," Delurgio says.

More common than a full-fledged CASE setup is using PCs for bits and pieces of applications development. Burlington Industries, Inc. in Greensboro, N.C., recently started using PCs for

Continued on page 60



Steve Mungrave

Continued from page 59

code writing and editing, says E. Ritchie Fishburne, director of corporate IS.

One group found a 10% to 15% productivity improvement in code editing and documentation preparation with the PC, compared with the terminal/host-based methods previously used.

PCs also help assemble data from operations, present statistical information to management and monitor performance. "Before, we were unable to get the depth, detail or frequency of [operational] information," Fishburne says. "Now, we're much more aware of trends."

At Spalding Worldwide Sports, where every IS staffer has a PC, the PC hasn't had any noticeable impact on the programming itself: "We still do the programming on the host," says Bard White, director of MIS.

PCs have sped documentation, however. "Before, people wrote out documentation by hand and gave it to a secretary to type," he says. "Now, everybody [types] his own documentation. It's a much faster process."

PCs go beyond applications development in their realm of influence. For instance, their very portability provides an

immediate payback, says Patricia Gilmore, director of MIS at The Coleman Co. in Wichita, Kan.

Systems programmers at Coleman take modem-equipped PCs home at night and on weekends in case they are called on to fix a problem.

"If they get a call at night because of a problem, they can get it fixed in five minutes. Before, it would often take an hour or more just to get in here to fix the problem," Gilmore explains.

There are a number of other seemingly minor ways in which PCs boost productivity. At Mrs. Fields, Inc. in Park City, Utah, programmers get quick printouts from PC-attached printers rather than waiting for the mainframe or minicomputer to process a printing job.

A PC-based data modeling program also helps Mrs. Fields programmers with systems analysis and design as well as modeling new cooperative processing applications.

Probably the biggest advantage, says Paul Quinn, vice president in charge of IS at Mrs. Fields, is that programmers can access multiple sessions on different hosts rather than having to log on to each host.

Simply by hot keying, a programmer can access any of the company's Application System/400 machines without passing through another AS/400, as he would have to do with a dumb terminal. Just "eliminating the hassle of having to go through one machine to get to another gives us, maybe, a 5% to 10% gain in pro-

ductivity," Quinn estimates.

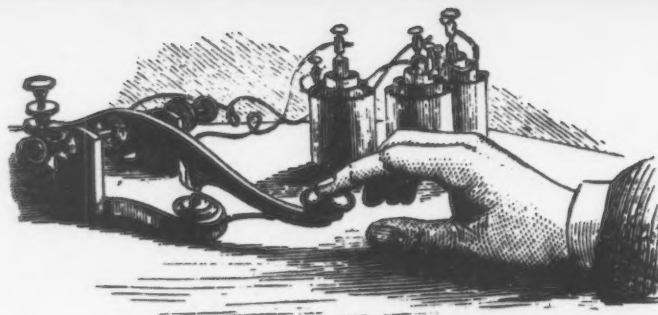
Something to keep in mind is that there's more to PC productivity in IS than the quantitative savings.

"PCs increase the quality of the work," Ernst & Young's Germann says. Between reduced mainframe resource consumption, higher output and, most importantly, better quality deliverables, Germann says he can easily justify spending \$6,000 to configure a PC for an applications developer.

"If you figure what a programmer costs you over three or four years, [\$6,000] is a small investment to make to increase his productivity." •

Radding is a free-lance writer based in Newton, Mass.

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Dana Sigall

► **Commodore Business Machines, Inc.'s Pet 4032** was touted as a low-cost, versatile computer for personal, educational and scientific applications. Commodore's catalogs listed the machine as "easy to use — previous computer experience is not necessary. A variety of software applications is readily available."

The 46-pound unit featured 32K bytes of RAM and 18K bytes of read-only memory and was built around the IEEE-488 bus. The Superpet was a 96K-byte RAM version. Both units came with Basic 4.0.

Interestingly, a Commodore spokesman says anyone who still uses the Pet can trade it in for \$300 off an Amiga 500 under a new promotion that began July 1.

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The shape of things: Flatter and thinned out

BY AMY BERMAR

At Boston's Gillette Co., 160 employees report to work in the corporate information systems department every day.

That number represents barely 15% of the company's entire IS head count. The remaining 85% almost never come within IS walls and don't even report to the head of IS.

It's not that these workers are slacking off; they're hard at work in one of Gillette's independent business units, reporting to the department heads there.

Whereas IS was once a self-contained,

highly centralized operation, today it is not uncommon for IS employees to be dispersed throughout a corporation. In fact, such decentralization is probably the biggest change IS has seen happen to its organizational structure in the past 10 years.

Key changes

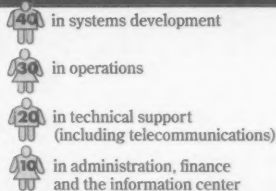
"Two key changes have affected the IS organization in the past 10 years," says Ted Klein, president of Boston Systems Group, Inc., a technology consulting firm in Boston. "Many nontechnical people in the corporation have acquired technical expertise, diminishing the once-absolute

responsibility of the IS department. And those people remaining in IS have found themselves decentralized throughout the corporation."

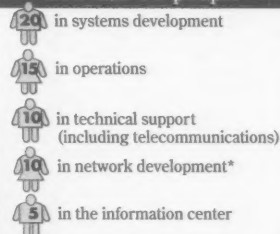
In the early 1980s, no one thought of breaking up the IS stronghold. Even personal computer education was done in centralized fashion: Information centers run by the head of IS were built to help users throughout the company acquire PCs, adhere to corporate standards and become proficient in their required applications.

By the late 1980s, however, most information centers had completed their initial missions, and today, for the most part,

A 100-person IS department in 1981 . . .



now has 60 people



* Departments without network development staffs have 30 staff members in applications development and five in information centers

Source: Boston Systems Group CW Chart: Doreen St. John

they are rapidly being eliminated.

Staffing patterns have clearly shifted out of the data center toward customer support, often at the expense of operations and systems development.

A decade ago at Hershey Foods Corp., no one was assigned to end-user support. Today, one-third of the IS group serves that role.

New specialties

In some cases, career programmers have been forced to develop new specialties. "Our IS department is gradually assuming a responsibility for the company's strategic direction, particularly on LANs," says Greg Chetel, who has directed systems planning and research at Gillette's corporate IS department.



Steve Mangrum

The choice often comes down to this: Change or leave. A half-dozen programmers at Echlin, Inc., a \$1.6 billion automobile parts supplier in Branford, Conn., refused to forsake their operational expertise when MIS Director Dick Hoch ported the department's critical applications to PCs.

The 12-person department was winnowed to four people, which Hoch says was probably for the best. Those who left, he explains, "didn't see the future in PCs."

This signifies the other big change in IS staffing: shrinkage. Staffs have been cut by anywhere from 10% to 40% in the past decade, industry experts say. •

Bermar is a free-lance writer based in Newton, Mass.

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such a good idea that other "data access and reporting tools" are beginning to show up. So proceed with caution. Because none of them has the function, flexibility, back end connections and ease of use you get in *Forest & Trees*.

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IS purchasers get smart — and vendors learn to listen

BY KIM S. NASH

The customer is always right — unless he is a personal computer user and the year is 1981. At that time, "you got what IBM gave you, and that's what you lived with," says John Claxton, network manager at Insteel Industries, Inc., a wire manufacturing company in Mount Airy, N.C.

Without any idea of how to take advantage of a PC in a business setting, users had to depend completely on the vendor for guidance on purchasing decisions, agrees Richard Entrup, office systems analyst at Tiffany & Co. in New York.

Things have changed, however. Ten years of PC experience have made customers bold.

In fact, most users say they now have the upper hand when making hardware purchases. By voting with their pocketbooks, talking candidly on CompuServe or a vendor's toll-free hot line and participating in one of the 310 national user groups for IBM PC and compatible customers estimated to operate in the U.S., smart users now tell vendors what they want and when they want it.

True, manufacturers are not exactly bellhops waiting to cater to each customer's whim. But vendors do listen better now than they did a decade ago, says David Dolkart, director of end-user support at The American Hospital Association in Chicago.

The current price wars stand as evidence that vendors submit to what is the top priority for Dolkart and many users: low price.

After Compaq Computer Corp. sliced its desktop prices by up to 34% in mid-April, Dell Computer Corp. cut its prices between 10% and 30%. IBM followed in

May, chopping up to 24% from the cost of its Personal System/2 line. Clones from Northgate Computer Systems, Inc. were 21% cheaper as of early July.

"We know how to weigh cost against functionality, and the manufacturers know we know — so they're listening," Dolkart says.

But price is only one of the demands users make today. Vendors are being forced to compete on more territory than ever before.

At your service

PC companies are learning they have to increase service to survive

	1988 service revenue	1988 total revenue	1989 service revenue	1989 total revenue	Service growth '88-'89
Apple Computer, Inc. (Cupertino, Calif.)	\$146	\$4,071	\$190	\$5,284	30%
Compaq Computer Corp (Houston)	\$46	\$2,066	\$65	\$2,876	41%
Everex Systems, Inc. (Fremont, Calif.)	\$8	\$267	\$11	\$377	38%
Tandy Corp. (Fort Worth, Texas)	\$65	\$3,794	\$72	\$4,181	11%
Zenith Data Systems (Buffalo Grove, Ill.)	\$68	\$1,400	\$70	\$1,550	3%

All dollar amounts are in millions

Source: Dataquest/Ledgeway, annual reports

CW Chart: Doreen St. John



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Hyundai Electronics America, 166 Baypointe Parkway, San Jose, California 95134.



Dana Sigall

► The Apple Computer, Inc.

'Lisa' computer was a popular offering in the early '80s. It featured a graphical user interface and a mouse, which also helped make Apple's later machines popular.

The Lisa, priced at less than \$3,500, had its own Apple-generated operating system, called the Lisa Operating System. This was designed to perform file management, memory management, event handling and exception handling. The Lisa was built around the Motorola, Inc. MC68000 microprocessor with a 32-bit internal data path and an addressing range of 16M bytes.

"Good price is the minimum I expect now," says Mike Cunningham, supervisor of microcomputing at Dr Pepper/Seven-Up Co. in Dallas. He also demands upgrades that keep pace with new technological developments, good manufacturer reputation and solid end-user support.

On the one hand, users like Cunningham are simply more aware of what they need. But it is the clone makers — and to a large extent, IBM — that contributed the most to the user's empowerment.

Clone makers such as Dell and Everex Systems, Inc., both 7 years old, succeeded in demystifying IBM by putting increasingly faster, cheaper and interchangeable equipment into users' hands — essentially creating a commodity-like market.

IBM was the company that created this open atmosphere. "One of the key concepts of the IBM PC was to use open, available standards for its architecture," says H. G. "Larry" Rojas, planning manager on the original IBM PC task force.

Rojas, who was in charge of planning the machine's features and defining its target market, admits that the openness of the IBM PC made it easier for other manufacturers to copy and sell their own versions of the computer. Compaq brought out its edition fewer than 12 months after IBM's version hit the streets in August 1981.

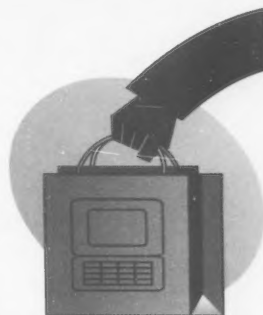
In a crowded market of look-alike equipment, vendors now need to devise new ways to differentiate themselves.

One of the most popular ways vendors

have chosen to stand out in a crowd is through service offerings. Until recently, end-user support could have been considered "the single biggest failure in the PC industry," says Portia Isaacson, principal analyst at BIS Strategic Decisions.

On the users' part, service has become so important that a vendor stands to lose sales or market share if it's unwilling or unable to ramp up its options in this area.

It was service that led Dr Pepper to drop Compaq and head for the clones. The information systems staff at the firm often does its own maintenance work on the company's 200 PCs, so it was important to have access to toll-free hot lines. "A lot of what drove us to the smaller vendors was that we could get that direct contact," Cunningham says.



Steve Mangrove

Just this year, many of the leading manufacturers started beefing up their direct end-user services.

Apple Computer, Inc.'s Technical Coordinator and Software Development Answerlines — two toll-free telephone lines inaugurated in June to help System 7.0 users — were recently made available nationwide. Even Compaq, which has traditionally mandated that its dealers provide service for its machines, now offers both toll-free and for-a-fee telephone support. Compaq also sends marketing staff into the field for informal visits with user firms (CW, June 3).

Dell, meanwhile, has had direct customer support since it sold its first PC in 1984. Isaacson calls Dell's support policy "one of the more innovative things that's been done in the PC industry."

Leading hardware vendors are also taking responsibility not only for their own equipment but also for other vendors' software that may be running on their machines.

Support is certainly the big marketing push these days, says Al Tucker, director of corporate information services at Quaker State in Oil City, Pa. The commonality among PC vendors has created more buying options than were out there 10 or even five years ago.

Indeed, where IBM was once a trendsetter, it now shares that influence with the other PC players. And users have become "a tough nut," Tucker says. •

DO YOU REMEMBER?



► The Visicalc spreadsheet

was one of the first software packages available for use on the IBM Personal Computer, and the PC version was ready just a week after the PC announcement in August 1981. More than 200,000 copies of Visicalc were sold for the IBM PC and compatibles market. Ironically, spreadsheets that followed the introduction of Visicalc, most notably, Lotus Development Corp.'s 1-2-3, usurped the onetime market leader. In fact, Visicalc creator Dan Bricklin says, Lotus' 1-2-3 was compatible with Visicalc, and the Lotus 1-2-3 manual had a section titled, 'How to read Visicalc files.'

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Then & Now

What did 1981 have that 1991 doesn't?

One phone company, a 23% tax cut and a 50-day baseball strike. Nostalgic?



1981: The as-yet-undecided U.S. vs. AT&T antitrust suit
1991: Microsoft feels antitrust heat

1981: Average dollar expenditure for software packages is \$98,568

1991: Major PC software vendors advertise \$149 price promotions

Source: Datapro Research Corp.

1981: IBM raises prices for nearly all program products 15%, purchase prices for most hardware 4% and rent and lease prices about 8%
1991: IBM announces its first-ever quarterly loss

1981: NCR files antitrust suit against AT&T charging anticompetitive practices that prevent NCR from competing in the semiconductor and information processing markets

1991: AT&T buys NCR for \$7.5 billion

1981: Total semiconductor worldwide consumption: 48.1 billion units

1991: 144.7 billion units

Source: Dataquest, Inc.

1981: Worldwide revenue of U.S. information technology industry: \$229.1 billion
1991: \$543.54 billion (projected)

Source: Computer and Business Equipment Manufacturers Association "The Information Technology Industry Data Book 1990-2000"

Famous 1sts

- First reuse of a spacecraft, the \$10 billion *Columbia*.
- First recognition of the AIDS virus by The U.S. Centers for Disease Control.
- First artificial heart implant, the Jarvik 7, for Barney Clark.



Top view



Bottom view

The very first IBM PC

This board is the original planar built to test the IBM PC design prior to laying out the printed circuit board. Microsoft received a similar board in 1980 to develop software

What your 1991 dollars will buy

If you took the money you spent on a personal computer in 1981 and went on a shopping spree today with those same dollars (adjusted for inflation), what would you get?

1981

System price:	\$2,665
Microprocessor:	Intel 8088, 4.77 MHz
Random-access memory:	64K bytes
Display:	320 x 200 pixel color TV*
Floppy disk:	320K bytes
Hard disk:	None
Printer:	9-pin matrix
Input peripherals:	Keyboard

*Color TV and RF modulator not included in price

1991

System price:	\$3,500 - \$4,500 (\$2,665 in 1991 dollars = \$3,975)
Microprocessor:	Intel 80386, 25 MHz
Random-access memory:	4M bytes
Display:	640 x 400 pixel color
Floppy disk:	1.4M bytes
Hard disk:	80M bytes
Printer:	HP Deskjet 500
Input peripherals:	Keyboard and mouse

Source: The Computer Industry Almanac's Egil Juliusen, co-author of "IBM's billion dollar baby"

U.S. microcomputer market share

1981	1991
Tandy/Radio Shack	16%
Commodore	12%
Apple Computer, Inc.	12%
Sinclair Research	10%
Sharp Electronics	6%
IBM	17%
Apple	13%
Tandy	5%
Compaq Computer Corp.	4%
Commodore	4%

Source: Infocorp

The IBM PC was the first personal computer to . . .

- Include an interface to a home TV
- Be supported with a software publishing department
- Go unsupported by IBM-developed system software
- Include music and a joystick interface
- Be introduced with a game as a primary program

From "IBM's billion dollar baby," a 1981 market research report by Portia Isaacson and Egil Juliusen



► Computer companies in the Fortune 500 in 1981: 13
In 1991: 22

► IBM's position on the Fortune 500 in 1981: 8
IBM's position in 1991: 4

► The number of microcomputer units shipped in the U.S. in 1981: 1.2 million
The number projected for 1991: 7.5 million

► Length of time it took the PC industry to equal the size of the mainframe industry: 5 years
Length of time it took the mainframe industry to reach its current size: 20 years

Source: Fortune magazine; Computer and Business Equipment Manufacturers Association; Industry Marketing Statistics; Infoworld

Cocktail Chatter

Politics

1981: President Reagan cuts taxes 23% over three years
1991: President Bush faces a record budget deficit of \$348 billion predicted for '92

People

1981: Prince Charles and Princess Diana are wed
1991: Tabloids speculate a royal estrangement

Media

1981: MTV launched
1991: Consumers will spend \$7.1 billion on video rentals

Source: Video Store Magazine

Sports

1981: 50-day baseball strike
1991: Baseball salaries topping \$21.5 million are widely criticized

Lifestyle

1981: U.S. median housing price: \$68,900
1991: Median price: \$79,100

IN DEPTH

THE IN-DEPTH INTERVIEW

Max Hopper

'The big systems you can use to leap ahead of the competition are becoming increasingly impossible to achieve'

Max D. Hopper, the 56-year-old American Airlines technology guru, has become so synonymous with information systems success that his name is mentioned first in any discussion of achieving competitive advantage through IS. Hopper built American Airlines' vaunted Sabre reservation

system into a cash machine for the airline and changed the way the U.S. airline industry does business. He did so while he was senior vice president at American from 1972 to 1982 and again from 1985 to the present.

Hopper is now chief executive officer and vice chairman of AMR Information Services, Inc., an American Airlines subsidiary that oversees the airline's Sabre reservation system and provides Sabre and IS services to more than 30 other airlines. This Fort Worth, Texas-based unit generates over half a billion dollars in revenue and much of the firm's profits.

A solidly built native Texan with a steely gaze and an air of assurance, Hopper can at first give the impression that he has taken his press notices to heart. But Hopper is not an arrogant man. In fact, he seems genuinely startled by the suggestion that he is regarded as one of IS' reigning superstars and instead brings up the name of someone he considers to fit that bill: DuWayne Peterson, the recently retired senior vice president of IS at Merrill Lynch & Co.

He also credits much of his success to his bosses — specifically, his current one, Robert Crandall, and a past one, H. Ross Perot.

Colleagues and associates say Hopper is easygoing, but as Perot observed in a 1987 *Computerworld* interview, there's also an unbending core. "A lot of guys are like veneer. Max is solid walling," Perot said. "He looks better every day. Some people never look better than the day you hired them."

Nonetheless, Hopper is not

above ruffling some feathers, as he did with a controversial article in the *Harvard Business Review* last year. In it, Hopper claimed that the era of competitive advantage, an era he helped define, is now over. He also predicted that the chief information officer position will eventually become an anachronism.

Hopper met with free-lance writer Glenn Rifkin to discuss his views on how the industry is changing.

Q In your article for the *Harvard Business Review*, you stated that the idea of competitive advantage through information technology was no longer possible. Can you explain?

A I didn't say competitive advantage was dead. I said the home runs, the big systems you can use to leap ahead of the competition, are becoming increasingly impossible to achieve.

However, the opportunity for IS in corporations is greater than ever. The technology capability



Stan Wiskulski

coming at us is going to offer tremendous capabilities beyond where we've been. To put it in perspective, where we've been is like first grade, and we've got sixth grade coming at us.

We are taking off into a brand-new era, with amazing changes in the cost/benefit, the price/performance of systems. We moved along at the old 10% compounded growth rate curve for years. But now we're seeing 40% and 50% increases in price/performance, particularly in the small and intermediate-size boxes.

This new era of technology is putting tremendous capability in the hands of people.

Q What do these advances mean to an organization?

A They mean we can work on problems that we haven't addressed in the past because the cost was too high or because IS hasn't been able to integrate data in a way that allowed management to take timely action. Now we'll have technology that can deal with the cost issue and eliminate the need to deal with things in a piecemeal way.

Q Do you sense there are a lot of IS people out there who need direction? Is that why outsourcing is becoming so popular?

A Outsourcing is a natural consequence of the IS business. That's where I think a lot of companies will be going — even well-managed companies will go to outsourcing.

There's an awful lot of
Continued on page 66

VITAL STATS

- Personal:** Born Nov. 4, 1934
Married to Jo Nelle Hopper. Two children — Steve, a doctor in Oklahoma City, and Laura, who works in marketing for Hallmark Cards, Inc. in Kansas City, Mo.
- Education:** Graduated from the University of Houston in 1960 with a degree in science and mathematics
- Employment:** Shell Oil Co. (1953-1967)
Electronic Data Systems Corp. (1967-1970)
United Airlines (1970-1972)
American Airlines (1972-1982)
Bank of America (1982-1985)
American Airlines (1985-present)
- Achievements:** Serves on the Information Technology Advisory Committee of the U.S. Office of Management and Budget
- Hobbies:** Wine making and collecting, fishing

Continued from page 65

the IS role today that is like plumbing and electricity. It's the basic running of the computers, the communications lines, ensuring the terminals stay up and operational in service. There's every reason to believe that over time, those functions can better be performed by outsiders because of the economies of scale.

The next layer up is defining application areas. I would submit to you there's already been a great deal of outsourcing [in this area]. We call it buying software. How many people write a payroll system anymore? In my industry, how many write a reservation system anymore? It doesn't make any sense.

The next question is, should you own the computer you run the application on? In some cases you might, but there are very few small airlines that run their own reservation systems anymore. I run 30 or 40. Is that bad? That's a natural evolution.

Q Are you considering outsourcing at American Airlines?

A As an IS professional, I don't necessarily want to be in the plumbing and electrical business. I'm doing that, however, because we're so big, and we have economies of scale, and we're better at it than a person outside. But I'll tell you, every year I go out and validate that because I'm not convinced that long term, that's the way to do it.

Every time we look at a new system or re-engineer a piece of our enterprise, I look at going out and buying a package as opposed to building my own. I'm outsourcing all the time.

I see outsourcing as a natural evolution — not as something to be feared, not as something that suggests that IS hasn't delivered. It's a lower cost alternative to solving business problems using technology.

Q What will IS professionals be left to do?

A I don't know of a company today that doesn't have two or three years of backlog in terms of solving their problems. Every company still has its own unique needs, and some of those are quite strategic. I doubt in the near to intermediate term that the very large companies with systems at the heart of their businesses will find solutions in the hardware store. So they're going to have to build them.

One of the abilities we have to have is knowing how to model data and understand the key data we have, how that drives the information needs of a company. We've done a very poor job of engineering that piece of our world. You'll see far more of that coming along.

I don't think there's any fear of any short-term shortage of IS work. In fact, there's an undersupply of IS people at the moment. But over time, the IS professional will become more of a facilitator of systems than the internal builder of every piece of a system.

They will still be needed for a long time to help orchestrate the business needs and technology needs of the company, helping understand changes and interrelating with vendors.

Q Won't a lot of the backlog be eliminated by end users who are tired of waiting? And why do you assume that the IS person will suddenly be able to be a facilitator?

A We're pushing very hard for our users to take over more and more aspects of the work. On the other hand, because of the structure and higher degree of interconnectability and integration, I still think there is a need for someone with IS understanding to oversee that.

As to the skills of that IS individual, they have to be of a different and higher kind than those of some of the technologists we have today.

If you look 10 years out, you might still need a lot of those types, but they may not be working in private companies — they may be working for the Electronic Data Systems, the Andersen Consultings, those companies that are doing the programming.

People who are in the companies buying these services will be of a higher skill level — much more business-oriented than technology-oriented.

Q There is a great deal of turmoil in that scenario, which seems to have resulted in a lot of turnover, especially at the CIO level.

A If you look at the top IS job in companies over the last 20 years, I'd be surprised if the average length of stay was over three years. There are studies that indicate that not much has changed in the past 15 years.

It does say there's some flux. This industry is definitely taking off, and change is accelerating. To the degree the individuals in the IS role don't understand what it means, aren't able to translate that into

acceptable situations for the corporation, then yes, there will continue to be a [turnover] problem.

Introducing new technology introduces change. We're really talking about change in two ways: There is change in a company, which is not easy. We're also talking change in the IS group. And the IS guys, if anything, are more resistant to change than others simply because they've had to maintain all these old systems, and they know what it means to try to ratchet things around real quick. It's very painful for them.

These guys have been doing things one way for 15 years — the way IBM told them was the right way. Now you come in and tell them they're supposed to go to client/server models and use PCs or this thing called Unix? It's totally confusing to them.

Q You've made some pretty strong statements saying that the days of the CIO are numbered.

A I won't back off that. I don't know if that's 15 or 20 years away. But at some point in time, we'll have the infrastructure in place, the plumbing and electricity that will enable us to plug in a workstation and it will work like a toaster. There won't be as much need for someone to oversee such basic functions.

The disciplines, like finance or marketing, are going to understand the interrelationship of information to their decision-making. It'll be laid out for them; it'll be taught in schools.

Hopper: Coming to American

Dogged by disappointments at United, he left in 1972

I imagine Max Hopper out-Sabre-ing Sabre on behalf of United Airlines! It almost happened.

In the late 1960s, Hopper, who was working at Electronic Data Systems, was trying to build a Sabre-like system for United. EDS had a letter of intent from United to build such a system under Hopper's guidance when an unnamed EDS executive pulled the plug on the deal, Hopper explains.

"We could have beaten Sabre at its own game," Hopper says. H. Ross Perot, EDS' leader, was delivering gifts to American prisoners of war in Vietnam when the EDS executive made what Hopper calls a "tremendous error in judgment on a policy decision."

The decision, which effectively killed two years of intense labor on Hopper's part, threw his career into flux. Hopper, who had spent those two years in Chicago working with United, did not want to uproot his young family and move back to Dallas. He opted for United's invitation to come aboard as the head of information systems to try to build the system from within.

Once inside United, Hopper set out to build an integrated system that would process reservations and other key applications within the airline. "It was a valid concept that still exists today because you need the synergy and integration of those things, especially in an airline," Hopper says.

It was the concept of an integrated

system, in fact, that Hopper later took to American Airlines.

Upon joining United, Hopper ran smack into a CEO change, which cost Hopper's boss his job. Hopper was left out on a limb, a limb weakened by a clash with United's systems people over their decision to sign a long-term deal with Univac for four 1108s for the reservation system. Hopper did not feel they would provide enough capacity.

Without the proper technology and faced with an unpleasant political environment, Hopper opted in 1972 to go to American, which was struggling with a major conversion of its Sabre reservation system from an IBM 7094 to an IBM 360 platform. He'd done some consulting with the company when he was at EDS, and American needed someone who had overseen a systems conversion to "get them the last 10 yards into the end zone."

Sabre, a simple inventory management tool that handled available seating and attached passenger names to booked seats, had reached its capacity in 1969. The conversion was long overdue. Hopper not only saw the change-over to a successful conclusion but also brought the basic parallel systems architecture to operations, crew tracking, flight following and flight planning.

He started the airline down the integrated path it has exploited to make Sabre the largest airline reservation system in the world.

GLENN RIFKIN

Q Does all of this changing of IS' role and the fact that the home-run era is over create an aversion to IS as a profession?

A What I said about the home runs doesn't suggest that I don't want to continue to try to find home runs, and I sure as hell hope I find a lot of singles, doubles and triples now and then.

My point is that trying to accomplish it is going to be much more difficult, if not impossible.

The IS role will be a much broader corporate role. It'll be focused more on projects, products, those kind of things. As the heavy functional structure breaks down, the generalist — and the IS person is far more a generalist than most of his counterparts today — will shine. Companies that don't look at continuing to take advantage of new technology are going to end up way behind.

Q How did the Sabre vision come to you?

A When I started to get into the field in the late 1950s, I was with Shell Oil in its research lab. I finished my degree in math and was going on to do graduate work in operations research. I wanted to be a business problem solver, and I thought that was the approach to do it.

They asked me to go into a new computer group they were setting up. They were getting an IBM 7070, which was a big machine in 1960. I didn't think this was very glamorous. I perceived computers as big adding machines. The glamour was in solving the business problem.

But I went ahead into the group, and what I saw was the ability to solve problems in a broader context by linking things together using the computer to do things you couldn't do before. It wasn't just a big adding machine; it had the ability to link information.

Q Did you ever feel at Shell that you were thinking this way and others weren't?

A At times, yes. In the systems context, I could put things together more broadly. But I didn't see myself totally standing apart from folks.

I probably would have stayed with Shell, except at Shell you couldn't make mistakes, and it was two years there, two years here. They were getting ready to send me to The Hague, but my wife didn't want to go overseas with young kids.

And then Ross Perot came along. He tried to recruit me for six to eight months, and I wouldn't go. He finally got me to come to Electronic Data Systems Corp. in Dallas in 1967.

Q What convinced you to go to EDS with Perot?

A The man himself, the charisma. He just convinced me that the concept he had, the company he was trying to build and the way he valued individuals were right for me. You knew he was going to push you to the limit.

At the time, I thought, "Here is an opportunity to really take advantage of doing something in an even broader context than what I was doing at Shell: taking the concept of broad systems and interrelating those with business and making it a business itself."

Continued on page 68

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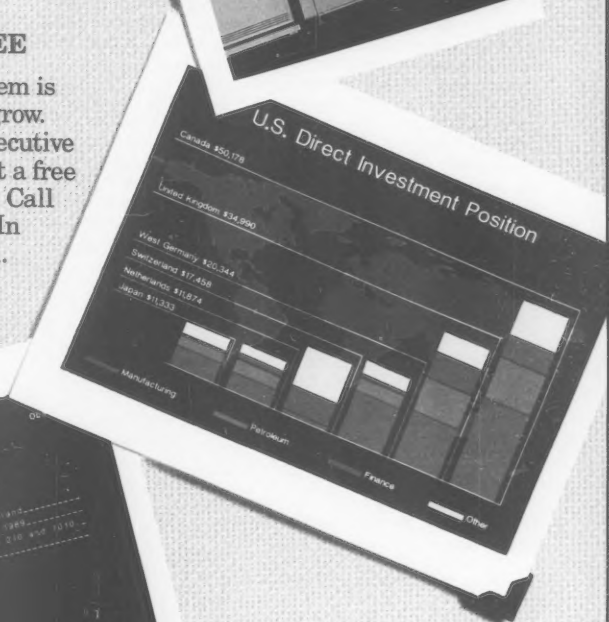
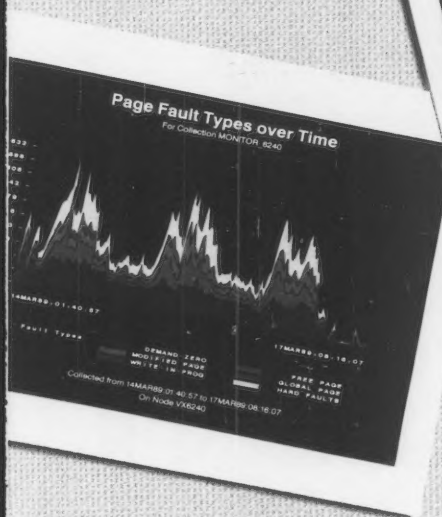
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Continued from page 66

Q What did you learn most of all from Perot?

A The value of individuals working together to set objectives and go out and tackle them.

Q Did you imagine, when you moved to American Airlines from United Airlines in 1972, that you were not just computerizing an airline but creating competitive advantage for American?

A From the standpoint of knowing what United was doing, the answer was yes. I wanted to find a way in which American could do things as well as or better than United. I didn't want them to be ahead of us because I knew how technology could be leveraged. Also, I wanted to do it better and cheaper.

The users of the systems wanted things as much as or more than I did.

It was a very happy relationship. We were all focused on solving some internal problems and at the same time knowing we wanted to be supercompetitive.

Q What made you leave American in 1982 to go to Bank of America?

A A couple of things. It was a recessionary period, and the entire airline industry was just moving into deregulation. In terms of technology, we didn't have the money to go out and do a lot more, and the technology was not far along enough to economically justify doing a lot more in the next 36 to 48 months. I just didn't see an internal challenge in the role I had.

There was also a plethora of good people above me, and I didn't see them moving out.

There was a tremendous challenge at Bank of America. Sam Armacost was just coming in as CEO. He had been there for a few months. It was the largest bank in the world, a totally new industry for me. They had enormous needs for processing. Sam had a lot of great ideas.

Q Was money an issue in your decision?

A I could have gotten more money than I got at Bank of America if I had gone out looking for a job. I can go out and get

more money today than American is paying me. I have people calling me all the time.

I'm not altruistic, but money is not the issue. It's the combination of being able to work in an environment where you can make things happen and get an adequate compensation.

Q DuWayne Peterson told people that he made seven figures. Do you make seven figures?

A No, but that doesn't matter to me. I've had a seven-figure offer. I decided not to pursue it.

Q You were at Bank of America 3½ years and then went back to American. Why?

A There were two situations. At the bank, during the restructuring effort, I led two task forces. One was the technology task force that created Bank of America systems engineering, or BASE. The other was the business entity that did processing systems. The whole point was to re-engineer the bank's systems. I recommended to both task forces that they form essentially independent business groups to have responsibility for those two things. At the time we formed them, I could have taken either job.

When Bob Crandall took over as chairman of American in February 1985, he called and said he'd like to come out and talk to me, which he did. He tried to get me to go back to American in March 1985. I turned him down. He kept calling back.

What he offered me at American was a chance to combine running the Sabre business, which I had started and run for three or four years, and expanding it into other businesses, really leveraging it.

That had appeal for me. So when I talked to Sam Armacost [at Bank of America], I said, 'I have this offer from American.' So we talked about whether we could combine those two businesses that had been started from the task forces. He said no. He'd let me run one or the other, but he wouldn't let me run them both.

Q You said you've gotten a seven-figure offer and turned it down. Is there anything that could get you to leave American?

A I haven't given that any thought. I could retire tomorrow if it made sense to do so, but I have great challenges left at American. I'm focusing these days on our \$150 million Inter-aact initiative.

Using a combination of data processing, office automation, personal computing and networking, we're looking to create



Stan Wolanski

Max's musings

► On his philosophy as a businessman:

"You've got to make the technology hit the business scene. But you've got to be forward enough in your thinking about technology so that you are proactive. Sometimes, you have to be anticipatory about business needs and have a concept of what is going to happen, have a little broader perspective than the immediate problem at hand. In that way, if you do solve that problem, you haven't hemmed yourself in for the future."

► On what drives him:

"I enjoy being a problem solver, whether it's playing bridge or putting together a jigsaw puzzle. I like to do it."

► On personal computers:

"I feel comfortable on one, but I am not a hacker. My wife is a hacker."

► On his hobby, wine-making:

"I'd like to grow grapes and make wine... I don't want to do it enough yet, however."

an integrated environment across the whole corporation.

Q Do you want to be a CEO?

A I already am, to some degree. In one sense, I'm not a pure CEO because I don't have authority to do things as independently as a CEO might.

On the other hand, I have a number of businesses that I'm responsible for.

Q But it's not the same as heading the whole show. What if United Airlines called and said, "Come and take over"?

A No, that is not the job I would want.

Q What if Steve Jobs had come to you instead of going to John Sculley?

A That would have been fun. That one I might have thought about.

Q When the headhunters call, those aren't the opportunities they call about?

A No. Most of the headhunters are talking about CIO jobs, and I think I already have the best CIO job in the country — maybe the world. •

A history of Sabre

1963

- Sabre inventory management tool debuts for handling available seats and attaching passenger names to booked seats. Replaces index cards and blackboards for handling reservations.
- During the year, it processed data related to 85,000 phone calls, 40,000 confirmed reservations and 20,000 ticket sales.

Mid-1970s

- Sabre provides the base for generating flight plans for aircraft, tracks spare parts, schedules crews and develops decision support management systems.
- Installed in travel agencies in 1976. During the next decade, database handles hotels, rail and rental cars.

Today

- Database holds 45 million fares.
- Forty million changes entered monthly.
- Handles 2,000 messages per second and creates more than 500,000 passenger name records daily during peak use.
- Operates in 14,500 subscriber locations in 45 countries.
- Links suppliers, retailers and customers with travel and related services.

Source: Max Hopper, *Harvard Business Review* (June 1990)

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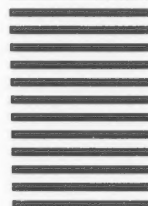
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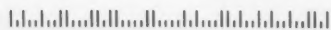
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COMPUTER INDUSTRY

NATIONAL BRIEFS

News from the front

► Potential players eyeing the worldwide outsourcing market (see story page 71) got a reminder late last month that the current players still know how to be masters of the game. Outsourcing pioneer **Electronic Data Systems Corp.** reported profit up 12% to \$140 million on revenue increased 15% to \$1.88 billion for the quarter ended June 30.

Ultimate in downsizing

► East Hanover, N.J.-based **Ultimate Corp.**, purveyor of products and services to the Pick and Pick/Unix markets, last week acquired Basking Ridge, N.J.-based **Computer Support of North America**, a supplier of local-area networks and downsizing services. The company did not disclose terms of the transaction.

Amdahl squeezed

► Hard hit by falling European sales, \$2 billion mainframe vendor **Amdahl Corp.** saw its second-quarter profit take an 86% nosedive. Amdahl posted quarterly net income of \$6.3 million — down from \$46.3 million in last year's comparable quarter — on revenue down 13% to \$450.6 million. The company blamed the precipitous drop on a slump, particularly in the UK, which has traditionally been its bastion of European sales strength.

More briefs on page 70

Zenith Data regroups to regain losses

BY MICHAEL FITZGERALD
CW STAFF

The French say "c'est la vie" — such is life — when events happen beyond their control. The French government firm that bought Zenith Data Systems in 1989 to make itself a global player in the computer market, must be singing the such-is-life chorus over the purchase so far.

In the year and a half since Bull paid Zenith Electronics Corp. \$511 million for Zenith Data, the personal computer maker has lost more than \$1 billion in government contracts to competitors, lost its market leadership in

the portable arena and lost its top management, which Bull had said it wanted to keep intact.

It has also lost money and sales. The once-profitable Zenith Data was a \$1.4 billion player in the worldwide PC market when it was sold. Now, it is thought to be down near the \$1 billion mark in sales and contributing to Bull's red ink, analysts said. Bull does not isolate figures for Zenith Data.



Zenith Data's Pesatori: "We know what market we will pursue"

New Chief Executive Officer Enrico Pesatori, on board since February, is willing to speak openly about Zenith Data's recent rocky road.

"When the market in the 1989 time frame became much

softer, the company in my opinion . . . did not make some decisions it needed to make," he said.

According to Pesatori, Zenith Data was pursuing too many product strategies, dividing its energies between tailoring machines for the government market and catering to the commercial one. As a result, he said, the company ended up not doing well in either market. In the case of the government, Zenith Data's backsliding cost it a market that had provided it with as much as \$500 million in annual sales.

Analysts said Zenith Data can bounce back, because it has not completely disappeared.

Pesatori "doesn't

need a major turnaround; he'll be successful if he can maintain its position," said David Evancha, director of research at Workgroup Technologies, Inc. in Hampton, N.H.

However, Evancha cautioned, "they have lost a lot of

Continued on page 71

Lengthening shadows

Losing market share, Zenith Data Systems faces tough challenges as the PC market competition becomes even more intense

	U.S. unit shipments (in thousands)	Percent share	Total PC market (all vendors)
'85	113	2%	5,650
'86	217.5	3.2%	6,800
'87	380.8	4.6%	8,280
'88	433	4.8%	9,020
'89	386.1	4.2%	9,190
'90	204.5	2.2%	9,300

Source: International Data Corp. CW Chart: Janell Genovesi

Sematech's worth debated at hearing

BY GARY H. ANTHERS
CW STAFF

WASHINGTON, D.C. — Industry witnesses at a congressional hearing last month were sharply divided in their assessments of the effectiveness and appropriateness of Sematech, Inc., the consortium of U.S. semiconductor manufacturers that is funded by member companies and the U.S. Department of Defense.

"Sematech remains the wrong answer to the wrong problem," said T. J. Rodgers, president of Cypress Semicon-

ductor Corp. Rodgers disputed the popular perception that the U.S. is rapidly losing ground to Japan in semiconductor technology. The key to regaining past losses, he said, lies with small specialty companies, not with the large, mainstream manufacturers such as Sematech members Intel Corp., Motorola, Inc. and IBM.

"We do not need . . . a handful of giant companies to compete head-on with the Japanese," he said. "Rather, we need hundreds more small, flexible, innovative companies to wage slashing raids

at Japan's weakest points."

Rodgers also charged that Sematech's government subsidies are unfair to nonmembers, while Sematech's dues structure discriminates against smaller firms.

Forum for debate

The hearing, which was held before a subcommittee of the House Science, Space and Technology Committee, was called to debate the effectiveness of semiconductor consortia and the government's role in funding them.

Jerry Rogers, president of Richardson, Texas-based Cyrix

Corp., a small designer of microprocessors, said Sematech has not lived up to its promise to aid the competitive viability of the U.S. semiconductor industry.

"In fact, one of Sematech's members, Intel, has taken such a strong anticompetitive stance toward us that we have been forced to file antitrust suits in federal and Texas state courts," Rogers said.

Others defended Sematech and consortia in general. "Sematech is . . . proving that fierce American competitors . . . can work for the common good in an environment of precompetitive cooperation," said Sematech President William J. Spencer.

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DB2® Technical Conference	October 6–11, Chicago, IL
IMS Technical Conference	December 3–6, San Diego, CA
Large and Storage Systems Technical Update	October 15–18, Gaithersburg, MD
Large Systems Performance Conference	October 22–25, Poughkeepsie, NY
OS/2® Technical Seminar	September 9–13, Newport Beach, CA
Management Conferences	Date and Location
Executive Management Conferences, "Creating World-Class Capabilities"	August 14–16, Philadelphia, PA (Wharton School) November 6–8, Orlando, FL

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Industry group seeks to tap into national labs

BY GARY H. ANTHERS
CW STAFF

WASHINGTON, D.C. — The Computer Systems Policy Project (CSPP), an affiliation of chief executive officers from 11 major U.S. computer companies, is negotiating a multitechnology research collaboration with the national laboratories of the U.S. Department of Energy.

What is more, the potential partners are pioneering a concept that could prove to be a boon to small computer firms. The group is currently working out plans with the Energy Department to establish a Cooperative Research and Development Agreement (CRADA), a vehicle for its joint research projects. The CRADA is a newly legislated mechanism for facilitating government/industry collaboration.

"The computer industry CRADA will provide the legal and administrative framework to allow a broad range of computer companies to negotiate small-scale projects in a fraction of the time it takes now," said Frank Carrubba, director of Hewlett-Packard Laboratories.

The CSPP identified three areas of research it said seem especially promising for collaboration: electronic packaging, information technology and material technology. Electronic packaging refers to the technol-

ogy for putting together dense, multichip systems.

The national laboratories chosen for the project are Sandia National Laboratories, Los Alamos National Laboratories, Lawrence Livermore National Laboratory, Oak Ridge National Laboratory and Argonne National Laboratory.

New directions

The CSPP recently outlined its plan to a congressional panel that met to discuss new roles for the labs, whose focus on the development of nuclear weapons has been blunted by the end of the Cold War.

Carrubba told the panel, "We believe that the federal laboratories... are a potential source of valuable expertise on a wide range of technologies of interest to the computer industry." The labs are especially advanced in their use of electronics, mass storage, supercomputers, high-speed data communications and the real-time visual rendering of scientific data.

However, Carrubba sounded a note of caution. "There is a widely held view in the private sector that government labs, across the board, are simply not effective in their interactions with industry... Tremendous cultural differences exist between the way the government labs and the private sector go about the business of research."

graphical business units. It will also get AT&T Network Systems Group Vice President William Patchett to head it up.

Their object all sublime

► IBM and Apple Computer, Inc. are not the only firms teaming up for a foray into object-oriented applications software development. Last week, Mountain View, Calif.-based object-oriented software pioneer Parplace Systems, Inc. and Gemini Consulting, a subsidiary of Paris-based Cap Gemini Sogeti, announced a development agreement and investment deal. Under the terms of the pact — financial details of which were not disclosed — Gemini Consulting and Parplace will collaborate on research aimed at enhancing Parplace's Smalltalk object-oriented technology to better serve Gemini's client base of large, and largely Fortune 500, companies. The work will be underwritten in part by Gemini's investment in Parplace, which gives it a minority stake in the software developer as well as a seat on the board.

VDT standards in the works

IEEE draft sets levels for possibly hazardous electromagnetic emissions

BY J. A. SAVAGE
CW STAFF

The Institute of Electrical and Electronics Engineers, Inc. (IEEE) released its draft standard for electromagnetic emis-

sions from VDTs last month and expects to have a final standard by the end of the year, said Dheena Moongilan, chairman of the IEEE VDT standards group.

The draft standard is voluntary. Nevertheless, it marks a

significant change: Computer firms have been floundering with no standard although public concern over the health effects of electromagnetic fields from VDTs was raised several years ago.

According to John Chubb, low-emission manager at Apple Computer, Inc., the industry wants standards so that firms will have something to quote to consumers with health concerns. Apple and others are quietly providing low-emission terminals with new

computers — but prior to the IEEE draft, there has been no definition of "low-emission."

Currently, the only standard is that spelled out by the Swedish government, which regulates very low frequency (VLF) and extra low frequency (ELF) emissions. VLF was dismissed as an agent in reproductive health problems by the National Institute of Occupational Safety and Health in March 1991. Early this year, however, the U.S. Environmental Protection Agency put ELF under scrutiny as a potential carcinogen. Studies of both types of fields are ongoing.

According to Chubb, the IEEE standard uses the Swedish baseline but measures the fields less stringently. "The Swedes were worried that computer makers would design around measurements" so they require 48 points of measurement, he noted. The IEEE draft requires eight points of measurement.

Between the IEEE and the Swedish government, computer makers hope that a worldwide standard for low emissions will be forged so that they can sell their products across national borders, Chubb said.

Seeds planted

Readying itself for electromagnetic emissions standards for VDTs, Apple is building an emission testing laboratory for its monitors at the firm's Cupertino, Calif.-based headquarters.

Emissions are difficult to check because they are affected by background radiation, other electric equipment and wiring patterns. Therefore, the Apple lab will be sealed off from electric intrusions, according to John Chubb, low-emission manager at the company.

Monitors will be tested for both very low frequency and extra low frequency fields in assembly-line manner, using turntables and lifts. "Automation of the process cuts down error," Chubb said.

J. A. SAVAGE



A spokeswoman for the CSPP said the CRADA will not spell out financial terms. That will be left to negotiations between individual companies and labs. She also said the CRADA will be for

use by any U.S. computer company, not just CSPP members.

The CSPP consists of the CEOs of IBM, Digital Equipment Corp., Hewlett-Packard Co., Tandem Computers, Inc., Apple

Computer, Inc., Cray Research, Inc., NCR Corp., Unisys Corp., Control Data Corp., Compaq Computer Corp. and Sun Microsystems, Inc. It accounts for \$120 billion in annual sales.

NATIONAL BRIEFS

Continued from page 69

State Street to Wall Street

► Chicago-based TSC is among the latest technology companies to file initial public offerings. The computer systems consulting and implementation company, which specializes in major corporate products, plans an offering of 2,880,622 shares in the U.S. and an additional 700,000 to be offered internationally. The offering price is expected to be somewhere in the \$12 to \$14 range.

NCR News

► NCR Corp. is rolling out a new Telecommunications Division aimed at marketing to AT&T and the regional Bell operating companies. NCR said last week. The new division, which will be part of NCR's United States Group, will get its own dedicated sales and marketing staff within each of United States Group's six geo-

EXECUTIVE CORNER

Leader named for start-up



Computer industry veteran Laszlo A. Belady has been named chairman and director of Mitsubishi Electric Research Laboratories, Inc., a newly established basic research institute in Cambridge, Mass. Formerly, Belady served as vice president of Microelectronics and Computer Technology Corp. (MCC) in Austin, Texas, where he directed the software technology and advanced computing programs. Prior to MCC, Belady spent 23 years at IBM, most recently serving as manager of software engineering at the Japan Science Institute, a branch of IBM's worldwide research organization.

Jack M. Berdy, chairman and chief executive officer of Port Lee, N.J.-based On-Line Software International, Inc. recently announced that William G. Nelson has been named CEO. Berdy will continue his ac-

tive involvement in both day-to-day and long-term matters, serving as both chairman and director of strategic development.



Manchester, N.H.-based Snap, Inc. has announced the appointment of Paul J. Rayment to the position of president, according to Jim Leavey, the firm's chairman, CEO and former president. Rayment has joined the company after more than 23 years of sales experience at IBM, where he served as a salesman, sales manager and branch manager. Snap, founded in 1983 by fellow IBM sales veterans Leavey and Mary Sennett, develops, sells and supports software products and sales training programs to large companies.

Concurrent Computer Corp. president and CEO Denis R. Brown has been named to the additional post of chairman of the

board. Brown, who has presided over the Tinton Falls, N.J.-based computer manufacturer since September 1990, formerly served for five years as president and CEO of Penn Central Industries Group, Inc., a \$1 billion subsidiary of Penn Central Corp. Earlier, he served for 15 years at ITT Corp. As chairman of Concurrent, he succeeds Dean W. Freed, who will continue as a director.

Bellevue, Wash.-based law office automation software vendor Custom Software Services, Inc. has a new president and chief operating officer: John C. Boutsikaris, who joined CSS after a 19-year career at Hewlett-Packard Co. At HP, Boutsikaris served most recently as worldwide corporate account manager for The Boeing Co. Prior to that, he held positions of increasing responsibility in sales, sales management and operations management. Frank Orth, who has served as president of CSS since founding the firm in 1983, will continue in its full-time employ as chief executive officer and chairman of the board.

Daimler-Benz takes Sogeti stake in services strategy

BY LINDA LEWIS
IDG NEWS SERVICE

PARIS — After more than a year of negotiations, Germany's Daimler-Benz AG and France's Sogeti SA finally tied the knot late last month. The firms' signed agreement enables auto manufacturer Daimler-Benz to take a major stride into the information services industry with the purchase of a 34% stake in Sogeti — the parent company of leading European software and services group Cap Gemini Sogeti (CGS).

"Daimler-Benz and its newest corporate unit — Daimler-Benz Inter-Services AG (Debis) — are not engaging in commercial adultery," but instead are working toward developing synergies around a European co-operation, said Daimler-Benz Chairman Edzard Reuter.

A newcomer to the computer industry, Daimler-Benz brought information technology into its operations via Debis slightly more than a year ago. "[Daimler-Benz] has transformed itself over the last few years from an

automobile manufacturer to an integrated technological group," said Manfred Gentz, president of Debis.

Three steps further into information services

If automotive player Daimler-Benz AG exercises all its options, it will end up controlling worldwide information services provider Sogeti — and the growing outsourcing clout of its subsidiary, Cap Gemini Sogeti

- Daimler-Benz AG takes a 34% stake in Sogeti SA, paying \$202 million for 9% in new capital stock and buying 25% from existing shareholders.
- Daimler-Benz lends \$202 million to Sogeti; loan is convertible into shares. Conversion between Feb. 1, 1995, and Feb. 1, 1996, would increase Daimler-Benz's stake in Sogeti to 39.9%.
- If Daimler-Benz exercises conversion rights between Feb. 1, 1995, and Feb. 1, 1996, it will acquire warrants that will enable it to become majority owner.

Source: IDG News Service, European bureau

CW Chart: Michael Higgins

The strengthening of Debis inherent in the Daimler-Benz/Sogeti deal could spell competitive pressure for Walldorf, Ger-

many-based software player SAP. Debis recently acquired 83.4% of Bad Oldesloe, Germany-based Organisations Partner

GmbH, an 80-person supplier of commercial software application packages, and reportedly the German standard software mar-

ket leader. According to a report in the German business press, this acquisition is expected to create competition for SAP; expectations could rise as Debis secures a strong strategic ally.

Although the agreement was made public on July 8 pending final approval of the Daimler-Benz supervisory board, final details of the deal were not revealed until July 23. Initially, Daimler-Benz will acquire 25% of the total 34% of Sogeti stock contemplated under the agreement from existing shareholders. In addition, it will pay Sogeti \$202 million for 9% in new capital stock, according to Gentz.

Sogeti President Serge Kampf will maintain majority control of Sogeti and its information services subsidiary, Cap Gemini Sogeti.

Under last month's pact, Daimler-Benz has also agreed to give Sogeti an additional \$202 million in the form of a loan convertible into Sogeti shares. If exercised during a 12-month period beginning Feb. 1, 1995, Daimler-Benz would increase its stake to 39.9%. It would also ac-

quire warrants from Sogeti giving it the right to subscribe to newly issued shares during the same 12-month period.

This scenario would enable Daimler-Benz to acquire a majority stake in Sogeti.

Focus on Systemhaus

Daimler-Benz's cooperation with CGS will focus mainly on Debis' software and services unit, Debis Systemhaus, which expects about \$202 million in revenue this year.

Under the agreement, Daimler-Benz and Sogeti will also create a joint venture in Germany, of which 51% will be owned by Debis and 49% by CGS. The venture will group Cap Gemini's German subsidiary, Cap Gemini SCS, and the professional services business of Debis Systemhaus. The remaining Debis business will be integrated into a Debis Systemhaus subsidiary.

Kampf said he was open to future partnerships in Europe, the U.S. and Japan. However, he said, potential partners will be viewed with an eye toward compatibility with Sogeti.

Lewis writes for the IDG News Service, European bureau.

IBM Japan still among the living, VP says

IDG NEWS SERVICE

TOKYO — IBM Japan Ltd. is alive and well, IBM Vice President Nobuo Mii told reporters at a Tokyo press conference late last month.

"To paraphrase Mark Twain, the report of IBM's death is greatly exaggerated," said Mii, who is concurrently IBM Japan vice president and general manager of Asia Pacific Technical Operations.

Despite the recent battering of its bottom line and its market share slippage in Japan, Mii appeared upbeat about IBM Japan's prospects. He pointed to the subsidiary's strengths in manufacturing small disk drives at its Fujisawa plant, its new 32-

bit notebook computer introduced March 27 and the May start-up of production at Display Technology, Inc. (DTI).

Created under an IBM joint venture with Toshiba Corp., DTI manufactures color flat-panel displays based on thin-film transistor technology. Toshiba and IBM each put \$40 million worth of seed capital into the plant and followed the investment with \$250 million more to get manufacturing operations up and running.

Mii also said IBM is strengthening itself through alliances such as the formation in March of the personal computer Open Architecture Development Group, which aims to spread the IBM PC standard in NEC Corp.-

dominated Japan, as well as in Taiwan and South Korea. In addition, he noted IBM's recently formed alliances with Germany's Siemens Nixdorf Informationsysteme AG and Apple Computer, Inc. He would not comment on the deal with Apple, saying it



is still under discussion.

Mii said IBM Japan has been suffering from a decline in sales of large mainframes to financial and heavy industry customers whose business is weak now.

The company also needs to train its sales force to think small, according to Mii. "We

have skills in our sales force to sell large machines but not the smaller ones," he said. IBM Japan salesmen have been spotted recently in the Akihabara electronics district of Tokyo learning how to sell retail.

Mii said the entire industry is undergoing a transformation to lower end computers and to a focus on software and systems solutions. IBM has been developing some software in Australia and other countries to help supplement the local offerings.

In addition, low-end machines are becoming such a commodity that the Personal System/55, the Japanese version of the PS/2, is now being made by IBM in Fujisawa, and by Matsushita Electric Industrial Co. and other Japanese companies in Japan, as well as by Matsushita in Taiwan.

persport 486s.

Still, Zenith Data has a long way to go, and Pesatori is the first to admit it.

"What we have to do takes many facets," he said. One of the primary ones is rebuilding a distributors' network that all but collapsed between 1989 and 1991, after Zenith Data established a policy that forced dealers to sell all of its products.

Pesatori is working to rebuild a network of distributors and recently landed a deal with Computertland Corp. that might give it as many as 333 new dealers, putting Zenith Data more than halfway to its stated goal of 1,000 resellers by the end of the current year.

when its market was itself undergoing wrenching changes.

Pesatori said he thinks Zenith Data's success in the government market in some ways caused its sudden slide in 1990, in that the firm was torn between designing products to meet government specifications and actively pursuing the commercial market.

But Pesatori remains optimistic. He said he believes 1990 will ultimately be seen as a temporary blemish for a company that grew in one decade from being Health Co. — a \$5 million maker of hobbyist PC kits — to being the \$1.4 billion apple of Bull's eye.

Pesatori said the company is

DOD contract won

The new machines won Zenith Data a major contract with Metropolitan Life Insurance Co. for the Mastersport 386SL and a contract with the U.S. Department of Defense for 21,000 Su-

INTERNATIONAL BRIEFS

The watchdog barks

► France's stock exchange authorities have asked the state prosecutor to investigate allegedly false accounting at SMT-Goupil, the country's last independent microcomputer maker, which was put into liquidation early last month, according to a report in the British financial press. The Commission des Operations de Bourse, the French stock market watchdog, said initial inquiries into the group "made it appear that SMT-Goupil had published inaccurate accounts and given deceitful information to the public." The Bourse findings contained an additional warning that "the responsibility of the auditors could be equally called into question."

Consolidation en Francais

► Olivetti Office France, the French subsidiary of Ing. C. Olivetti & Co., is planning to merge with two other wholly owned Olivetti subsidiaries: Hermes-Japy France and Triumph-Adler France. The move reportedly would involve the loss of 240 jobs — approximately 33% of the combined employee complement of the three firms. The merger aims to improve economies of scale and the performance of the Italian firm's French subsidiaries, which reported an aggregate \$284 million in 1990 revenue.

Zenith Data

FROM PAGE 69

mind share in the market, and they have to get that back." Even if the company is successful in doing that, Evancha added, it cannot likely regain its premier position in the portable market.

Evancha said Zenith Data's decline was independent of Bull's purchase.

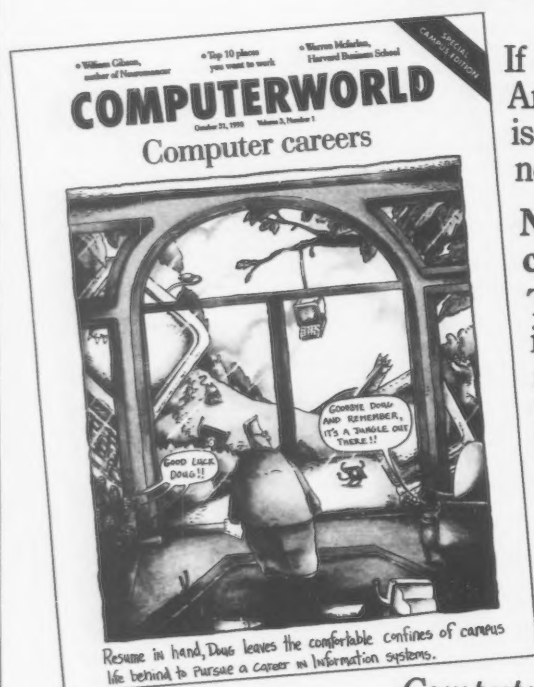
Robert Kidd, an analyst at San Jose, Calif.-based market research firm Dataquest, Inc., disagreed. He said, made its move at just the wrong time, buying Zenith Data — and inviting all the disruptions that necessarily follow an acquisition —

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- Merits of an Electrical Engineering degree for a computer career.
- Information Systems salaries from Computerworld's annual survey with the Data Processing Management Association.

COMPUTER CAREERS

Early retirement plans entering IS picture

BY LUCIE JUNEAU
SPECIAL TO CW

Thanks to widespread corporate downsizing, many information systems workers in their 40s and early 50s are facing early retirement offers that are just too good to ignore.

Many companies have offered attractive early retirement packages in recent months. Would you be ready if your company offered you such a package tomorrow?

Workers who decide to retire early are in a good position to pursue goals that might otherwise have to wait until a later age, says Hal Karlin, a principal at Corporate Resource Group, Inc., a human resources firm in San Francisco, which specializes in career transition counseling.

But it takes careful planning to make the right decision, Karlin and other experts say.

A key first step is understanding the nature of early retirement. The offer doesn't mean the company is dissatisfied with an employee; offers are typically

made companywide or to entire departments. Businesses are looking to save money.

The idea is catching on. A survey of 273 large U.S. employers by Charles D. Spencer & Associates, a market research firm in Chicago, found that 15% offered early retirement. About 28% of eligible employees accepted.

In fact, leaving the workplace early is a definite trend. In 1963, 80% of workers age 62 were in the work force, according to the U.S. Department of Labor. In 1985, only 51% of workers that age were still working.

Incentives

Early retirement incentives take different forms. Programs usually add years to an individual's age or service for the purpose of computing pension eligibility, allowing people to qualify for retirement sooner.

In addition, companies may throw in additional pension benefits, health insurance, cash settlements and "bridges" to Social Security in which the employer fills in the gap between the time

paychecks cease and Social Security checks arrive. Some companies remove penalties that normally apply when individuals withdraw their pensions early.

"That was my personal trigger," says Charles Jursch, a former IS middle manager at Pacific Bell in San Ramon, Calif. "Our particular plan applied a 3% per year penalty [on pension premiums] for each year under 55 you retired. I retired at 51 and didn't get the 12% percent penalty I would have," he says.

A tricky point is that employees must take advantage of early retirement incentives within established time frames or windows, which can range from as little as a week to as much as one year, according to the Spencer & Associates survey. A 60 to 90 day window is typical, says Maryann Laketek, a consultant with Hewlett Associates, a research firm in Washington, D.C.

Given the importance of the decision, that's not much time. For that reason, it's best to anticipate the offer.

"If you're working for a business that you don't suspect will give you early retirement and they give you 90 days to make a decision, it's very difficult to change careers in 90 days," Jursch says.

Many people who accept early

retirement incentives and are happy with their decisions have interests outside of work that lead them into a second career.

Jursch turned his woodworking hobby into a business: "I've remodeled homes since the first one I moved into 25 years ago."

Can you afford it?

Karlin encourages his clients to get a professional assessment of their financial situation before making a decision to accept an early retirement offer.

The American Association of Retired Persons (AARP) warns that at a modest inflation rate of 3%, retirees can expect a fixed monthly pension benefit to lose one-third of its purchasing power in just 11 years. Only about 5% of all private pension plans provide automatic inflation adjustments, according to the AARP's figures.

Juneau is a free-lance writer and editor in Salem, Mass.

Work choices

Many early retirees don't head the stereotypical route to Florida golf courses. Instead, they continue to work to brighten their financial outlook.

For example, Tom Baker, formerly a Pacific Bell IS professional, is pursuing other IS opportunities. "I expect not to work too much longer because I can achieve my financial objectives [in a short period], but it's important to find that opportunity," he says.

Many indicate that having a network of professional contacts helps speed the job search. IS professionals may have a particular challenge selling themselves in the job market because "they're not necessarily marketeers," Baker says.

Consulting is another popular avenue for early retirees because it provides independence and flexibility to workers who are ready to get away from a structured regimen, says Ha! Karlin, principal at Corporate Resource Group, Inc., a human resources firm in San Francisco.

LUCIE JUNEAU

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INDUSTRY CURRENTS

Hospitals take healthy IS dose

As a result, CIOs and professionals outside hospitals in strong demand

BY CHRISTINE CASATELLI
SPECIAL TO CW

Not too long ago, most job-hunting IS professionals would skip right over any ad for hospital staff. Those jobs just weren't the high-prestige, high-pay positions, according to John Haffty, director of information services at Newton-Wellesley Hospital in Newton, Mass.

The fact is, hospitals have historically been considered small spenders when it came to information systems. Compared with the banking industry, where an average of 10% of a bank's budget is allocated to IS, hospitals put aside only 2%, says Charles Owen, medical director at St. Elizabeth's Hospital in Beaumont, Texas.

Instead of hiring systems specialists, hospitals often retrain existing personnel, says Steve McMahan, a regional director at Source EDP in Boston.

Today, however, hospitals are entering what some people call their "third wave" of technology, phased the "strategic MIS," Owen says.

Although a hospital may not live or die by its IS, "there's a growing realization within the field that a system can certainly give a degree of competitive success," Haffty says. At Newton-Wellesley, a hospitalwide information system installed last year has decreased the average length of hospital stays while increasing the volume of patients, he says.

As the importance of IS grows in the hospital environment, so does the need for qualified personnel to manage them. Hospitals now look to hire IS professionals outside of the hospital industry to run their systems.

In turn, the chance to work with state-of-the-art magnetic resonance imaging systems and hospitalwide information networks is attracting a more qualified class of systems specialists. For the first time, IS managers at hospitals are receiving a hefty load of unsolicited resumes from IS candidates with good credentials.

One plus of recruiting hospital systems staff from retail or other highly competitive markets is that they would have experience with leading-edge technologies

and would know how to use them to save money in a hospital environment. "We would like to bring the benefits of other industries to the health care profession," Owen says.

However, a small number of IS managers in the hospital industry offer arguments against hiring technical people from other industries.

For example, IS managers from banking institutions may be more interested in cutting costs than in making sure the system is easy for the hospital staff to use. "We want our people to be very user-oriented," says Terry Heinen, operations supervisor at St. Cloud Hospital in St. Cloud, Minn.

In addition to dealing with the doctors, nurses and other hospital staff, IS professionals need to be aware of the rules and policies that govern that field. This can present a major learning curve to outsiders, Heinen says.

The CIO answers the call

Another trend that indicates hospitals are taking a more serious look at technology is the historically small number of chief information officers that has expanded over the last few years.

For example, the Healthcare Information Management Sys-

tems Society (HIMSS) and the Center for Healthcare Information Management released a study in 1989 outlining the growth of the CIO in hospitals. In 5,700 hospitals nationwide, only 400 CIOs had a position labeled as such. John Glaser, vice president of IS at Brigham and Women's Hospital in Boston and president of HIMSS, would not estimate what the number would be this year but predicted it would be much higher than 400.

"A CIO creates a level of visibility within the organization and offers access to decision-makers," Haffty says. To give the position real credibility, hospitals are offering competitive compensation to CIOs. "The salary of a hospital CIO can range from \$100,000 to \$150,000," he says.

The move toward hiring a CIO starts with cost pressure from insurance companies and government agencies that require hospitals to account for every expense, says Frank Russo, a consultant specializing in health care automation. In 1984, Medicare stopped reimbursing all costs and would only reimburse fixed costs. Hospitals had to really track their costs to make sure they weren't spending more than they would be reimbursed for.

Add to this the tremendous amount of patient data ranging from medical histories to laboratory tests to physicians' notes,

and hospital administrators have no choice but to put someone in charge of the monumental task.

Hospital CIOs have their work cut out for them, trying to integrate a number of systems and departments to track costs yet maintain privacy. And above all, there are the users — the doctors, nurses and clinical staff —

"WE WOULD LIKE to bring the benefits of other industries to the health care profession."

CHARLES OWEN
ST. ELIZABETH'S HOSPITAL

who need quick and easy access to information. "You're dealing with bright but not computer-literate users who are not likely to change their practice patterns because of a computer," Russo says.

Although early CIOs in hospitals focused on financial applications, today's CIO must be equally adept at managing diagnostic data and medical records.

The significance of CIOs in health care is that management is making an important statement: The danger with not having someone knowledgeable about systems in a top spot is that decisions are haphazard and uninformed, Heinen says.

Casatelli is a free-lance writer based in Washington, D.C.

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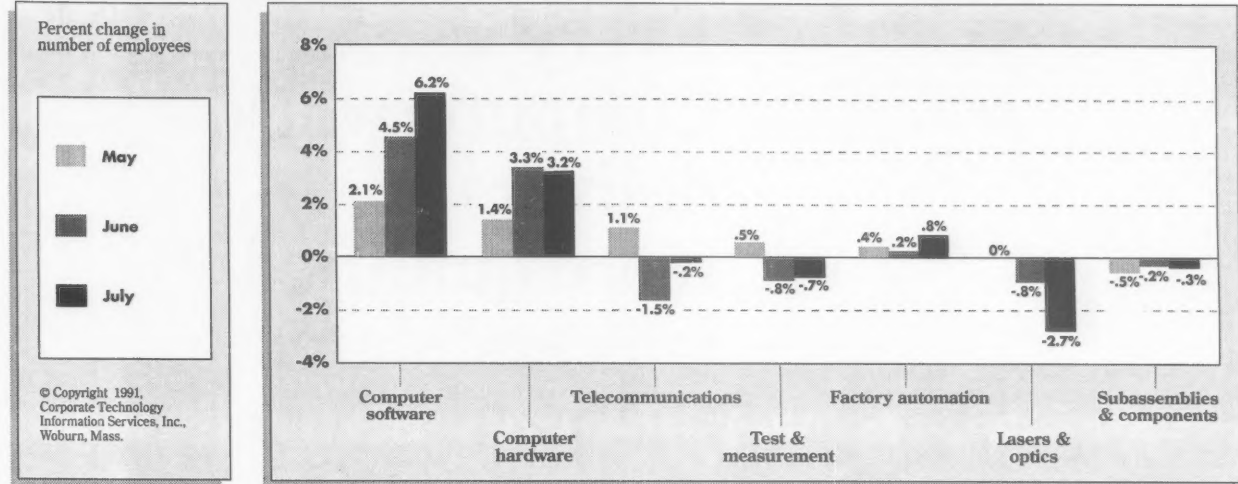
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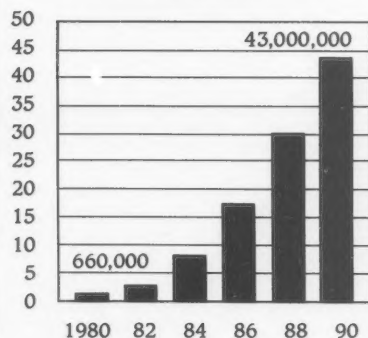
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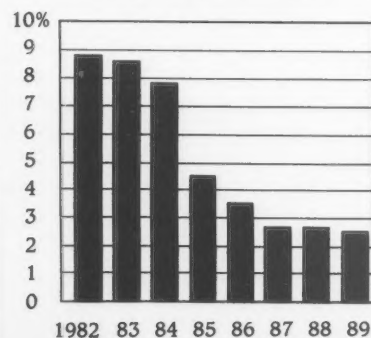
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MARKETPLACE

What to do with your high-tech hand-me-downs

BY ALAN RADDING
SPECIAL TO CW

Puzzled about what to do with those old word processors no one touches anymore? Worried about how to dispose of some last-generation personal computers? The easiest and most cost-effective method of disposal may be to give them away.

With the help of companies dedicated to matching donors and recipients, IS people can offer to certain charitable organizations the aging or unused equipment that clutters their departments and company warehouses.

"This is stuff we thought we would have to put in the trash," says Katherine Thompson, senior systems analyst at Aluminum Company of America (Alcoa) in Pittsburgh, which has given away old equipment.

Companies cite three major reasons for donating obsolete equipment: to get the stuff out from underfoot quickly, to perform a public service and to save on taxes.

However, finding a charitable organization that is willing and able to use the equipment can be a formidable challenge. System compatibility and technical skills

present the most serious obstacles. The donor may find himself making lots of telephone calls just to match the equipment with an interested charity.

That's where equipment clearinghouses enter the picture. These organizations are dedicated to matching donors of computer equipment with charitable causes. The groups' objective is

to make it easier for IS departments to give away equipment.

Although most charitable organizations want the same kind of modern equipment any business wants, the clearinghouses can place just about anything. The East/West Educational Development Foundation in Boston, for instance, can find appreciative homes in Eastern Europe for

equipment no Western organization would touch.

The National Christina Foundation in Pelham Manor, N.Y., found a home for Alcoa's potpourri of equipment: dual-drive PCs, Apple Computer, Inc.'s Lisas and telex terminals. These machines are now being used at a school that trains disabled people, Thompson says.

Giving away equipment through the clearinghouses offers advantages to IS groups:

- The clearinghouses make the arrangements to take the equipment off IS managers' hands quickly and with a minimum of bother.
- They match the donor's equipment to the needs of the charitable organization.
- They provide all the proper paperwork, allowing the donor to collect tax deductions where appropriate.

Held/Investments Computerland in San Luis Obispo, Calif., donated approximately 50 obsolete Tandon Corp. demonstration model PCs through the National Association for the Exchange of Industrial Resource (NAEIR) in Galesburg, Ill.

"We didn't want to give them away locally, and it would cost us more money to try to sell them than we could get, so we called NAEIR," says Smith Held, mar-

keting manager.

The tax breaks differ for used and new equipment. Any company can claim as a charitable donation the fair market value of used equipment donated to a bona fide charity, provided the equipment hasn't already been fully depreciated. To determine this, IS professionals should check with their accountants.

Only companies that give away large quantities of equipment will realize substantial tax savings.

For example, Cambex Corp. in Waltham, Mass., a manufacturer of peripherals and memory expansion for IBM systems, donated 120 dumb terminals through the East/West foundation. The foundation brought in a third party to appraise the equipment and then assigned a \$50 value to each terminal. "We got a \$6,000 tax credit," says Marc Shifres, cost accounting manager at Cambex.

Any costs incurred, such as shipping, are also tax-deductible. A company donating new equipment follows a more complicated formula to determine the tax savings, somewhere between the equipment's cost and the retail value. In all cases, the clearinghouses provide the paperwork necessary to document the donation for tax purposes.

Radding is a free-lance writer in Newton, Mass.

How to find the clearinghouses

East/West Educational Development Foundation, Boston, Mass. (617) 542-4414

Works with emerging democratic and free enterprise organizations in Eastern Europe.

Contact: Alex Randall

National Association for the Exchange of Industrial Resource, Galesburg, Ill. (309) 343-0704

Handles new equipment (demonstration models, floor samples, inventory overstocks) donated by manufacturers, distributors, resellers and others.

Contact: Jack Zavada

National Christina Foundation, Pelham Manor, N.Y. (914) 738-7494

Works with organizations that help the disabled.

Contact: Yvette Marrin

Non-Profit Computing, New York, N.Y. (212) 559-4307

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The BoCoEx index on used computers

Closing prices report for the week ending July 26, 1991

	Closing price	Ask	Bid
IBM PC Model 176	\$200	\$450	\$200
XT Model 089	\$350	\$500	\$350
AT Model 099	\$600	\$675	\$500
AT Model 239	\$625	\$725	\$600
AT Model 339	\$775	\$1,000	\$700
PS/2 Model 30-286	\$1,150	\$1,300	\$1,000
PS/2 Model 60	\$1,300	\$1,700	\$1,300
PS/2 Model 70P	\$3,400	\$3,600	\$3,200
Compaq Portable II	\$700	\$1,050	\$700
Portable 286	\$1,100	\$1,300	\$1,000
SLT 286	\$1,700	\$1,900	\$1,550
Portable 386	\$1,900	\$2,100	\$1,500
LTE 286	\$1,800	\$1,900	\$1,600
Deskpro 286	\$800	\$1,000	\$700
Deskpro 386/20	\$2,150	\$3,000	\$2,000
Apple Macintosh Plus	\$750	\$975	\$700
SE	\$1,100	\$1,250	\$1,050
IIX	\$3,550	\$3,600	\$3,500
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IIFX	\$5,300	\$5,800	\$5,200

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INDUSTRY ALMANAC

GUEST SPEAKER

Charles Frumberg, software analyst at Mabon Securities Corp. in New York:

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"Revenues for first quarter came in at \$36.6 million, about 20% higher than last year's at this time. Powerhouse [the company's applications development software] did well. Sales of the [Application System/400] version came in at just more than \$1 million. This product brings in the largest average ticket size for Cognos.

"Next year's new products should maintain sales momentum. Its extension of Powerhouse into the Digital Equipment Corp. Ultrix market and IBM's [RISC System/6000] machines open up exciting opportunities. The company's first client/server product — Powerhouse 7.0 — is scheduled to ship in late November of this year. Cognos is a safe way to play the market."

RECOMMENDATION CHANGES

UPGRADED FROM HOLD TO BUY: Unisys Corp. (Prudential Securities, Inc.). Reason: Earnings may be choppy for the next couple of quarters, but once sales and profits become stable — probably in mid-1992, as a result of the major restructuring recently announced — stock price will pick up; Unisys stock is a long-term buy.

DOWNGRADED FROM NEUTRAL TO SOURCE OF FUNDS: Software Publishing Corp. (Alex. Brown & Sons, Inc.). Reason: Harvard Graphics sales were close to expectations, but the rest of the business "fell off a cliff" in the quarter just reported; next quarter, the company will likely post a substantial loss following the charges associated with the acquisition of Precision Software, Inc., which owns a big chunk of the Microsoft Corp. Windows flat-file database market.

UPGRADED FROM NEUTRAL TO BUY: BMC Software, Inc. (Alex. Brown). Reason: Outstanding first-quarter financials topped even the most aggressive estimates; new license sales jumped 45% over last year's count at this time; sales of DB2 utilities made up one-fourth of BMC's business and continue to swell; BMC stock should be a core holding for technology investors.

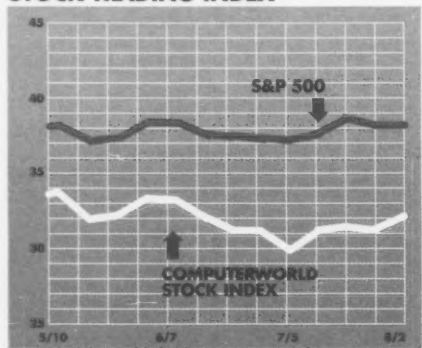
DOWNGRADED FROM NEUTRAL TO AVOID: Digital Equipment Corp. (Bear, Stearns & Co.). Reason: While DEC slims head count, it is also likely to make acquisitions — such as buying the computer unit of Philips Electronics N.V. — that partially negate that cost-reducing move.

DOWNGRADED FROM STRONG BUY TO BUY: Weitek Corp. (Alex. Brown). Reason: Second-quarter results reached expectations, but order rates continue to be weak; earnings for remainder of the year look grim.

DOWNGRADED FROM STRONG BUY TO NEUTRAL: Computer Associates International, Inc. (Alex. Brown). Reason: Company said in its first-quarter financial statement that customers delayed purchases because of "technology transition issues," which can be interpreted to mean that they are moving toward midrange, server or Unix machines before CA has products available for these platforms; sales for the quarter were much lower than anticipated.

KIM S. NASH

STOCK TRADING INDEX



Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, AUGUST 2, 1991

TOP PERCENT GAINERS

Ultimate Corp.	37.04
Compression Labs Inc.	30.70
Corporate Software	28.38
Teradata	25.86
Businessland Inc.	25.07

TOP DOLLAR GAINERS

Storage Technology	6.50
Adobe Systems Inc.	5.25
Apple Computer Inc.	5.13
Compression Labs Inc.	4.38
Compaq Computer Corp.	4.38
Lotus Development	4.38

TOP PERCENT LOSERS

Alliant Computer Sys.	-21.37
MIPS Computer Systems	-18.85
Computer Sciences	-16.88
Anacom Inc.	-11.76
Micrograph	-10.54

TOP DOLLAR LOSERS

Computer Sciences	-11.50
MIPS Computer Systems	-2.68
Xerox Corp.	-1.75
Bell Atlantic Corp.	-1.25
Lotus Development	-1.25

Communications and Network Services Up 2.80%

Exch	52-Week Range	Aug 2 Close	Wk Net Change	Wk Pct Change
OTC	14.88 5.38	3 COM Corp.	7.63	0.50 7.02
NYS	69.75 52.50	American Info Techs. Corp.	60.38	-0.13 -0.21
NYS	40.38 29.00	AT&T	39.88	0.00 0.00
OTC	4.13 0.88	Arnet Communication Corp.	1.88	0.31 19.95
NYS	56.25 39.50	Bell Atlantic Corp.	47.25	-1.25 -2.58
NYS	56.25 46.25	BellSouth Corp.	48.13	-0.50 -1.03
NYS	46.50 13.13	Cabletron Systems	45.63	3.13 7.35
OTC	25.88 8.25	Compression Labs Inc.	18.63	4.38 30.70
OTC	5.13 2.44	Data Switch Corp.	2.75	-0.13 -4.35
NYS	21.88 8.88	Digital Comm. Assoc.	13.63	-0.25 -1.82
OTC	25.25 12.25	Dynatech Corp.	18.50	0.00 0.00
OTC	12.38 5.00	ETC Corp.	5.38	0.13 2.38
OTC	63.00 40.25	Gandall Technologies Inc.	28.00	-0.13 -0.50
NYS	3.50 1.63	General Datacomm Inds.	2.63	0.00 0.00
NYS	33.50 23.50	GTE Corp.	29.50	0.25 0.85
OTC	13.25 4.00	Network General	8.75	0.25 2.94
OTC	37.00 17.88	MCI Communications Corp.	28.75	1.38 5.02
OTC	8.25 2.75	Microcom Inc.	7.75	0.38 5.08
NYS	10.88 4.00	Network Equipment Tech.	10.75	0.50 4.88
OTC	13.25 4.00	Network General	8.75	0.25 2.94
OTC	15.50 8.13	Network Systems Corp.	15.00	0.38 2.56
NYS	39.88 22.13	Northern Telecom Ltd.	38.38	-1.00 -2.54
OTC	18.75 17.25	Novell Inc.	58.75	2.75 4.91
NYS	77.50 67.00	Nymex Corp.	74.00	0.75 1.02
NYS	47.50 36.25	Pacific Telesis Group	42.50	-0.38 -0.87
OTC	11.83 3.63	Perini Data Comm. Netwks.	8.00	0.00 0.00
NYS	24.50 8.88	Scientific Atlanta Inc.	14.25	-0.25 -1.72
NYS	57.50 47.25	Southern Bell Corp.	54.25	1.63 3.09
NYS	51.50 20.63	United Telecom	19.13	0.13 0.67
NYS	40.75 32.38	US West Inc.	38.25	-0.88 -2.47

Computer Systems Up 3.96%

Exch	52-Week Range	Aug 2 Close	Wk Net Change	Wk Pct Change
ASE	5.25 0.56	Alliant Computer Sys.	0.69	-0.19 -21.37
OTC	17.88 10.00	Amdahl Corp.	14.38	0.50 3.60
OTC	12.25 3.50	Apple Computer Inc.	11.13	1.12 11.42
OTC	10.00 3.50	Archive Corp.	4.25	0.38 9.68
OTC	32.75 7.50	AST Research Inc.	26.00	0.75 2.97
NYS	9.38 4.00	Bolt, Beranek & Newman	7.13	0.00 0.00
NYS	21.63 4.50	Commodore Int'l	14.50	1.63 12.62
NYS	74.25 28.88	Compaq Computer Corp.	36.25	4.38 13.73
OTC	2.13 0.13	Computer Automation Inc.	1.25	0.00 0.00
NYS	14.50 6.75	Control Data Corp.	9.38	-0.63 -6.25
NYS	19.75 8.38	Convex Computer	10.75	-1.25 -10.42
NYS	44.50 20.00	Cray Research Inc.	39.50	3.50 9.72
NYS	19.38 3.50	Data General Corp.	16.63	-0.75 -4.52
NYS	3.25 0.75	Datapoint Corp.	1.50	0.13 9.09
OTC	30.63 8.25	Deft Computer Corp.	30.13	2.13 7.59
NYS	83.00 45.50	Digital Equipment Corp.	89.50	0.88 1.29
NYS	28.88 13.75	Harris Corp.	26.50	3.38 14.44
NYS	58.63 24.88	Hewlett Packard Co.	56.50	2.63 4.87
OTC	11.83 3.63	IBM	100.25	-0.25 -0.25
OTC	12.00 7.75	Information Int'l	9.75	-0.25 -2.50
OTC	31.50 14.00	Intergraph	22.25	0.75 3.49
OTC	2.25 0.44	ISI Systems Corp.	0.50	0.06 14.16
NYS	149.00 114.00	Matsushita Electronics	125.00	1.75 1.42
OTC	19.00 9.00	Mentor Graphics Corp.	13.88	0.50 3.74
NYS	109.50 44.50	NCR Corp.	108.88	-0.38 -0.34
OTC	29.50 10.75	Pyramid Technology	16.25	0.00 0.00
OTC	27.00 8.25	Sequent Computer Sys.	9.25	-0.25 -2.63
OTC	47.25 16.00	Silicon Graphics	37.75	3.00 8.25
NYS	37.25 14.63	Stratus Computer Inc.	35.50	1.75 5.19
OTC	36.63 15.00	Sun Microsystems Inc.	32.75	4.13 14.41
NYS	19.00 8.88	Tandem Computers Inc.	12.13	-1.13 -9.25
NYS	38.50 23.50	Tandy Corp.	26.63	-0.50 -1.84
OTC	25.50 6.75	Teradata	18.25	3.75 25.86
NYS	7.00 1.38	Ultimate Corp.	4.63	0.25 5.74
NYS	10.25 1.75	Unisys Corp.	3.75	-0.25 -6.25
ASE	5.75 2.00	Wang Labs Inc. (b)	3.25	-0.13 -3.70

Software & DP Services Up 2.58%

Exch	52-Week Range	Aug 2 Close	Wk Net Change	Wk Pct Change
OTC	63.00 17.00	Adobe Systems Inc.	54.50	5.25 10.60
OTC	12.25 3.50	Acorn	7.13	0.30 0.30
OTC	59.88 20.25	Altus Corp.	39.25	-0.25 -0.63
OTC	28.50 12.00	American Mgmt. Systems	20.00	-0.50 -2.44
OTC	17.25 7.50	American Software Inc.	13.25	0.88 7.07
NYS	4.63 3.38	Anacom Inc.	3.75	-0.50 -11.76
OTC	18.25 10.00	Analysts Int'l	13.50	0.00 0.00
OTC	16.63 4.88	Ashton Tite	15.50	-0.13 -0.80
OTC	10.25 4.00	ASX Computer Sys.	9.38	-0.63 -6.25

THIS WEEK'S HIGHLIGHTS

- New issue Wellfleet Communications, Inc. started trading last Wednesday at 17, but traders quickly boosted shares to 22 1/2 by Thursday's close, up 5 1/2 points.
- IBM said the new mainframes it expects to ship in September will be faster than first announced. IBM stock gained 1/2 of a point last week to close Thursday at 101 1/4. Amdahl Corp., which released poor quarterly financials last week, picked up 1/4 of a point to 14 1/4. Digital Equipment Corp. was unchanged at 69 1/2.
- Systems Center, Inc., which makes software for mainframes and minicomputers, said it pulled itself out of the red last quarter; its shares fell, however, dipping 1/2 of a point to 8 1/2.
- Data General Corp. rose 1/4 of a point to 17; it announced new Avion workstations last week.
- Elsewhere, semiconductor makers Intel Corp. and Dallas Semiconductor Corp. both gained. Intel jumped 3 1/2 points to 49 1/2, while Dallas added 1/2 of a point to 8 1/4.

Aug 2 Close Wk Net Change Wk Pct Change

Exch	52-Week Range	Aug 2 Close	Wk Net Change	Wk Pct Change
NYS	37.00 22.63	Auto Data Processing	33.50	1.50 4.69
OTC	62.25 32.00	Autodesk Inc.	52.00	-1.00 -1.89
OTC	18.75 9.50	BGS Systems Inc.	17.75	2.75 15.59
OTC	46.25 7.75	BMC Software Inc.	45.50	1.50 3.41
OTC	16.25 8.75	Boole & Babbage Inc.	10.13	0.88 9.46
NYS	64.25 14.50	Borland Int'l	1.50	0.44 2.47
NYS	3.88 0.44	Businessland Inc.	0.94	0.19 25.07
OTC	20.88 5.13	Cognos Inc.	17.38	0.38 2.21
NYS	11.13 4.38	Computer Associates	8.75	-0.13 -1.41
OTC	9.25 2.63	Computer Horizons	11.75	1.25 11.90
NYS	73.25 36.75	Computer Sciences	56.63	-11.50 -16.88
NYS	11.25 6.63	Computer Task Group	7.38	0.13 1.72
OTC	22.75 13.00	Comshare Inc.	20.75	0.50 2.47
OTC	13.50 3.75	Corporate Software	11.88	2.63 28.38
NYS	50.38 27.88	General Motors E (EDS)	50.38	1.38 2.81
OTC	18.75 7.25	Goal Systems Int'l	13.75	-0.50 -3.51
OTC	7.00 1.88	Hogan Systems Inc.	5.50	0.50 10.00
OTC	24.63 7.75	Information Resources	24.13	2.13 9.66
OTC	9.25 2.63	Infomax Corp.	6.19	0.44 7.62
OTC	4.75 1.38	IntellCorp Inc.	3.13	0.00 0.00
OTC	8.25 2.50	Interleaf Inc.	5.25	0.00 0.00
OTC	43.25 10.00	Intersearch	10.25	0.75 7.89
OTC	45.00 16.75	Knowledgeware Inc.	26.50	2.50 10.42
OTC	35.50 12.50	Lotus Development	24.00	-0.50 -2.04
OTC	32.00 10.50	Micrograph	34.00	-1.25 -3.55
OTC	78.38 33.88	Microsoft Corp.	73.25	2.25 3.17
NYS	10.50 4.00	On Line Software Int'l	10.00	0.50 5.26
OTC	16.38 4.88	Oracle Systems	0.00	0.00 0.00
NYS	13.25 7.00	Parsons Systems	9.88	1.38 16.18
OTC	10.00 1.25	Phonetic Technologies	9.75	-0.13 -1.41
NYS	52.38 33.38	Poly Management Sys.	49.88	0.88 1.79
NYS	22.75 11.50	Reynolds & Reynolds	20.50	-0.50 -2.38
OTC	27.25 14.75	SEI Corp.	26.25	1.75 7.14
OTC	22.88 12.75	Shared Medical Systems	21.75	-0.25 -1.14
OTC	35.25 12.00	Software Publishing Corp.	11.75	-0.25 -1.67
NYS	14.63 5.50	Starling Software	11.88	-1.00 -7.77
OTC	9.50 3.00	Sungard Data Sys.	0.00	0.00 0.00
OTC	55.88 17.75	Symantec Corp.	50.25	1.75 3.61
NYS	14.50 4.50	System Center Inc.	8.50	-0.38 -4.23
OTC	37.25 14.63	System Software Assoc.	15.75	1.13 7.68
OTC	16.75 4.75	Wetask	0.00	0.00 0.00

Semiconductors Up 2.26%

Exch	52-Week Range	Aug 2 Close	Wk Net Change	Wk Pct Change
NYS	14.25 3.63	Advanced Micro Devices	11.50	1.13 10.84
NYS	12.50 5.50	Analog Devices Inc.	8.63	-0.38 -4.17
OTC	16.38 4.88	Chips & Technologies	9.88	0.13 1.33
OTC	29.25 28.00	Intel Corp.	49.75	4.00 8.84
NYS	12.50 5.13	LSI Logic Corp.	7.75	0.63 8.87
OTC	19.13 1.75	Micron Technology	1.50	1.13 13.83
OTC	20.88 7.25	MIPS Computer Systems	12.38	-2.88 -18.85
NYS	76.75 45.75	Motorola Inc.	68.13	2.75 4.34
NYS	8.38 3.00	National Semiconductor	6.13	0.38 6.52
OTC	47.63 22.50	Texas Instruments	33.88	0.75 2.26
OTC	12.25 3.00	VLSI Technology	7.88	0.25 3.28
ASE	11.13 3.38	Western Digital Corp.	3.38	-0.38 -10.00

Peripherals & Subsystems Up 0.17%

OTC	2.75	0.88	Aperatus Technologies	1.50	0.00	0.00
OTC	19.00	7.50	Banctec Inc.	12.50	-0.50	-3.85
OTC	17.50	4.25	Cambex Corp.	17.75	1.50	10.53
ASE	11.75	4.13	Cognitronics Corp.	9.38	0.63	7.14
NYS	31.25	14.63	Conner Peripherals	22.88	1.63	7.88
OTC	17.50	7.00	Dataram Corp.	10.38	0.13	1.22
NYS	13.00	4.25	EMC Corp.	8.75	0.50	8.00
OTC	47.25	33.75	Eastman Kodak Co.	40.75	1.25	3.16
OTC	11.25	4.75	Emulex Corp.	8.25	-0.13	-1.49
OTC	26.25	14.00	Evans & Sutherland	19.00	-0.38	-1.94
OTC	6.50	3.88	Image Corp.	5.38	0.69	14.65
OTC	28.25	6.75	IPL Systems Inc.	20.25	1.00	5.19
OTC	3.38	0.13	Master Systems	0.75	-0.06	-7.27
OTC	10.38	1.83	Master Corp.	2.88	0.00	0.00
OTC	18.00	4.38	Microplus Corp.	7.00	-0.13	-1.75
NYS	97.50	73.63	3M Corp.	86.38	-1.13	-1.29
OTC	1.25	0.13	Phonetic Technologies	1.50	1.13	13.83
NYS	24.75	8.50	QMS Inc.	22.88	2.50	12.27
OTC	18.25	8.25	Quantum Corp.	11.75	1.13	10.59
OTC	11.50	4.00	Quantum Information Equipment	8.50	-0.50	-5.88
OTC	11.50	4.00	Rexon Inc.	8.38	0.50	6.33
OTC	19.88	5.63	Seagate Technology	8.75	-0.75	-7.88
OTC	10.50	11.00	Sony Corp.	6.50	1.50	23.08
OTC	4.75	1.25	Tandon Corp.	2.69	-0.25	-8.55
NYS	30.50	11.93	Tektronics Inc.	29.88	0.13	0.44
OTC	0.53	0.16	Teletek Video Systems	0.28	0.00	0.00
OTC	60.13	29.00	Agilent Corp.	55.25	-4.88	-8.12

Microsoft details OS/2 stance

Focus is on server support, client migration to Windows, Ballmer says

BY PATRICIA KEEFE
CW STAFF

The Windows-OS/2 decoupling is in danger of becoming a parody of the old Abbott and Costello baseball routine. "Who's on first?" is now "What is Microsoft's OS/2 strategy?" Many users would say the answer is the same in both cases: "I don't know."

Last week, Steve Ballmer, Microsoft Corp.'s senior vice president of system software, said Microsoft will not wholly abandon OS/2 customers. "We are committed to doing right by customers who have made investments in OS/2 due in part to our evangelism," he said.

"Doing right" mostly means server support, however, and this will probably force users committed to OS/2 clients to turn to IBM. That is not acceptable for some large OS/2 accounts, one of which expressed "doubt there is a corporate account left that trusts Microsoft."

According to Ballmer, Microsoft sees OS/2 retaining "some level of popularity" at the server. Hence, there will be future OS/2 versions of SQL Server, LAN Manager and Comm Server. However, they will not necessarily keep pace with each new release of "OS/2 2.X."

For the client, the picture gets fuzzier. Microsoft will continue to license OS/2 to OEM customers to ensure its availabil-

application software. This migration will be done via a Presentation Manager subsystem under development [CW, July 29].

New Technology will ship with "fairly good support" character-based OS/2 programs. "The PM part is harder; that work probably won't get done until 1993," Ballmer said.

A second phase of this migration strategy might involve encouraging users to rewrite their applications to the Windows application programming interfaces, he added.

And if the OS/2 user does not want to migrate? "Other than providing support at the server, we'll just continue to license whatever IBM does to OS/2," Ballmer said.

That is not enough for the Toronto-based Royal Bank of Canada. "What we want to know is whether [Maples] is committed to delivering on OS/2 platforms," said George Oliver, manager of information delivery technology.

All compatibility and support bets are off after OS/2 2.0. "OS/2 1.X and 2.0 are things I designed, understand and can commit to," Ballmer said. He claimed IBM is not cooperating in OS/2 3.0 development.

"It is not our intention to forever try to clone what might be put into [IBM's] OS/2 2.X," Maples agreed.



Microsoft's Ballmer: IBM is not cooperating in OS/2 3.0 development

ity on non-IBM hardware.

Customers with custom-built OS/2 applications can expect a "transparent way" to migrate to New Technology, Ballmer said. But that could take two years. "The exact level of compatibility will be determined as the world unfolds and IBM makes its [OS/2] plans known," said Mike Maples, senior vice president of

How low can mail-order firms go? Watch 'em

BY MICHAEL FITZGERALD
CW STAFF

Mail-order clone makers, the cheapest of the cheap in the personal computer heap, are cutting prices down to dirt-cheap level. For those who think the dirt comes from their own graves, most observers say, "Think again."

As firms such as Zeos International Ltd. in St. Paul, Minn., and Northgate Computer Systems, Inc. in Eden Prairie, Minn., report record quarterly profits, they are also cutting prices, and analysts said they think the pricing cuts will continue.

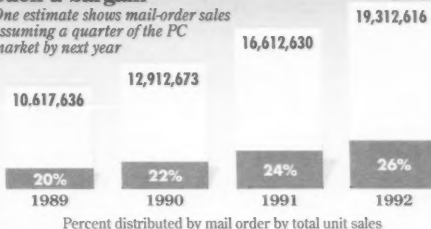
"I see no letup in reductions in pricing for at least another six to nine months," said Peter Kastner, vice president of Aberdeen Group, a Boston-based

Gateway 2000 Ltd. in North Sioux City, S.D., which is on target to hit \$500 million in sales this year, routinely cuts prices every 90 days. Austin, Texas-based Compuadd, a \$512 million mail-order firm with 70 retail stores, cut prices last week. Other mail-order firms contacted, such as Personal Computer Professionals, Inc. in Darien, Ill., said they will follow suit.

This rash of price-cutting has meant that IBM and Compaq Computer Corp.'s price slices have had little effect on the mail-order clones, most analysts said. But Richard A. Shaffer, editor and publisher of "Computerletter," a newsletter in New York, said price-cutting by leading vendors has put "substantial pressure" on mail-order vendors and predicted a poor future for them.

Such a bargain

One estimate shows mail-order sales assuming a quarter of the PC market by next year



Source: Workgroup Technologies, Inc.

market research company.

Kastner pointed to Intel Corp.'s slashing \$300 from the price of an i486 processor and its need to compete in the 80386 market with clone chips from Advanced Micro Devices, Inc. A surplus of components such as 3½-in. hard drives is driving prices down as well, to the point where Kastner said a 386DX/25-MHz-based PC could sell for less than \$1,000 before long.

David Mack, a vice president at Workgroup Technologies, Inc. in Hampton, N.H., said depending on the company, mail-order vendors could cut another 10% to 15% from prices.

Analysts and the clone makers point to better business practices as a way to reduce pricing. Zeos said its recent price cuts, as much as 17% on some systems, come in part from bringing motherboard manufacturing in-house, while Northgate reported record profits despite lower revenue and cited a sharp drop in operating expenses.

Bear, Stearns is a large user of NET's IDNX T1 multiplexers. However, Adaptive was savvy in "detaching itself technically from the IDNX architecture," Malone said. "They can take anyone's T1 or router network

"In a price war, the smaller companies bleed to death," Shaffer said.

Dell Computer Corp. has removed "the mail-order stigma" from itself and should survive any price wars, Shaffer said, but he added that companies such as Gateway and Northgate could well become casualties. Analysts said only 35% of Dell's business comes from its mail-order side, with the rest being generated by its telemarketing efforts.

Prices will continue to decline, predicted Gary Held, president of Northgate. He said his company, which ran into financial difficulties last year, is building the cash flow it needs to continue to grow, something other mail-order firms will need to do to survive. "One of the things I'm getting a kick out of is when we had our problems in November of last year, I mentioned to our people that Northgate is always ahead of its time... You'll see this happening in the rest of the industry," Held said.

and hook it into the next highest tier of networking."

Adaptive's president and founder, Audrey MacLean, predicted that "a fourth to half of our revenues this year will come from non-NET customers."

Broker finds broadband to be money in bank

BY JOANIE M. WEXLER
CW STAFF

NEW YORK — Bear, Stearns & Co. said last week that it has been successfully beta-testing three broadband switches from Redwood City, Calif.-based start-up Adaptive Corp. and has committed to purchasing seven units. The brokerage firm cited significant lowering of billed-back transmission costs because of the bandwidth management capabilities in the switch.

Jeffrey Marshall, managing director of communications at Bear, Stearns, said he predicts a drop in monthly T1 charges from \$365 per line to \$185 by November and to \$175 by April 1992. He said he expects a 15-month payback on the equipment.

"Today, we're restricted in how we bill because our T1s are nailed up," he explained. "With the [switch], we bill on an application-specific basis; users can choose how much bandwidth

they would like for a given application" and pay for only that bandwidth.

"The [switch] is powerful in that it guarantees integrity of a user-specified amount of bandwidth throughout a transmission," said Richard Malone, principal at Dedham, Mass.-based wide-area consultancy Vertical Systems Group.

Last week, Adaptive, a subsidiary of wide-area networking veteran Network Equipment Technologies, Inc. (NET), began shipping the \$70,000 to \$200,000-plus Sonet Transmission Manager Model 18 (STM/18) that Bear, Stearns is using.

The STM/18, Adaptive's first product, leads a new generation of wide-area products that could eventually supplant the relatively cheap (less than \$10,000) but unintelligent M13 and 3/1 digital access cross-connect system (DACS) devices in use on Wall Street and in other heavy data users' networks.

Like the STM/18, the M13s and DACSs aggregate traffic from 28 T1 (1.5M bit/sec.) circuits onto a 45M bit/sec. T3 line. However, the STM/18 adds network management, rerouting and circuit provisioning.

Marshall said he is using the box to multiplex and manage mainframe, T1 multiplexer, bridge/router, video, voice and other traffic over three T3s running among a data center and trading floor in New York and a backup data center in Whippany, N.J.

The three-site beta test supports seven noncritical printing, voice and local-area network interconnect applications, he said.

Marshall said he sought out the STM because of "a maturing process in the network with more intensive computing power on the desktop and in the back office."

Marshall said he also considered products from other broadband start-ups, "but they couldn't manage bandwidth."

NEWS SHORTS

Staff cutbacks hit Ashton-Tate

Ashton-Tate Corp. began slashing its work force by 15% late Friday in a bid to cut the database software company's head count to 1,300 employees. Company officials said the cutbacks are unrelated to the firm's pending acquisition by Borland International, Inc. Ashton-Tate chairman and chief executive officer Bill Lyons said the cuts are intended to improve the company's revenue-per-employee ratio. Severance payments are expected to equal what the dismissed employees would have earned during the balance of 1991, according to Ashton-Tate.

AT&T names Mandl CFO

AT&T brought in its new chief financial officer last week: Alex J. Mandl, former chairman and CEO of global shipping company Sea-Land Services, Inc. Mandl is said to have spent more than \$300 million on telecommunications and information systems to help coordinate the global movement of Sea-Land's transport vehicles. AT&T's former CFO, Morris Tanenbaum, retired earlier this year. In other news, AT&T said last week that Richard A. McGinn, president of AT&T's Computer Systems Division, will become senior vice president of strategy, sales and customer operations when the NCR Corp. merger is completed this fall. As was previously announced, Bill Williamson, currently president of NCR, will take over as CEO of AT&T's and NCR's combined computer businesses.

Wellfleet goes public

Internetworking products vendor Wellfleet Communications, Inc. is among the latest to sign on to the rapidly swelling list of 1991 initial public offerings by technology firms. The Bedford, Mass.-based company went public last week at \$17 per share, ushered into the market by Goldman, Sachs & Co. and Alex. Brown & Sons, Inc.

Apple mum on portables source

Apple Computer, Inc. declined to comment last week on a published report that said Sony Corp. had agreed to provide Apple with a line of portable and notebook computers. A spokeswoman for Sony in Tokyo reportedly confirmed that Sony "has received a request from Apple to produce a compact computer." Sony already supplies Apple with displays and disk drives. John Sculley, Apple's CEO, has said Apple will bring out a notebook computer this fall, adding that Apple "doesn't intend to be left behind" in this market.

Apple to sell 'Macintoshovarish'?

Apple Computer will begin selling its Macintosh personal computer in the Soviet Union this fall, complete with Apple's own operating system in Russian. Greg Borovsky, Apple's Soviet Union director, said last week that the firm has signed a one-year contract with Moscow-based firm Intermicro to set up dealerships. The first Macintoshes are set to arrive in October.

BBN plans cutbacks

Bolt Beranek & Newman, Inc. (BBN) is dismantling the advanced computer unit that was to produce its next-generation parallel computer, bowing to high development costs and a lack of outside funding for the code-named Coral Project, company officials said last week. Once a parallel computing pioneer, BBN had been consistently disappointed by revenue from those systems, which analysts said never rose above \$12 million per year out of total revenue exceeding \$260 million.

Logitech adds 3-D mouse

Pointing devices gained a new dimension last week with the introduction of a three-dimensional mouse from Logitech, Inc. The five-button Logitech 3-D mouse, being demonstrated at Siggraph, is intended to provide an input device for multidimensional graphics applications such as computer-aided design and virtual reality. Three ultrasonic speakers and microphones are used to determine the position of the mouse in both horizontal and vertical planes. Production versions of the mouse are expected in the first quarter of 1992.

SIM honors Hopper, Fadem

Society to recognize IS leadership of American Airlines, Bankamerica

BY CLINTON WILDER
CW STAFF

CHICAGO — A company with a longstanding reputation for information systems excellence and another that has bounced back from an erratic systems past were named the winners of the 1991 Partners in Leadership Awards by the Society for Information Management (SIM) last week.

American Airlines, best known for its Sabre reservation system and other strategic systems, was honored for the development of an internal system that allows employees to access and share information on intelligent workstations.

Bankamerica Corp., which has recovered from loan-related losses and its infamous \$50 million Masternet systems write-off, was cited for its Customer On-line Information Network (COIN).

Ironically, American Airlines award winner Max D. Hopper, vice president of IS, worked at Bank of America in the mid-1980s and hired Bruce Fadem, the Bank of America IS executive being honored.

"We started COIN when I was there, but I certainly

wouldn't claim to take credit for it," Hopper said with a laugh. (An interview with Hopper appears on page 65.)

Hopper and business partner Robert D. Crandall, American Airlines' chairman and president, will receive the award at SIM's annual conference Oct. 6-10 in Chicago.



Hopper had hand in Bankamerica

Fadem, senior vice president and manager of retail/corporate automation at Bank of America, will share the award with Larry McNabb, executive vice president and executive officer of retail banking.

The COIN system supports Bank of America's growing retail banking business by integrating 21 million previously disparate customer accounts. According to the San Francisco-based banking giant, COIN has helped speed customer identification by 50%, reduced customer turnaround time and cut processing costs.

Bank of America posted strong financial results last year, while most other large money center banks suffered losses now resulting in

dramatic industry consolidation.

American Airlines' system, called Interact, was installed two years ago to replace a variety of special-purpose terminals with standardized Intel Corp. 80386SX-based workstations. Its 3,000 users work with many applications, ranging from image-based document management to business analysis of customer databases.

American Airlines developed the system "to accelerate the interactivity of our people working together," Hopper said. "People have to work more closely together in teams. Hierarchy is not universally accepted anymore."

Hopper praised longtime ally Crandall for supporting the project despite a lack of immediately quantifiable benefits. "He was chief supporter and best critic," Hopper said.



Fadem will share Bankamerica prize

SIM, based in Chicago, created the awards in 1987 to honor innovative efforts of senior business executives and IS management.

Past winners have included leading corporations such as Du Pont Co., Frito-Lay, Inc. and Bergen Brunswig Corp. as well as the government of Singapore and the city of Dallas police and fire departments.

Macworld served up, not terribly spicy

BY JAMES DALY
and CAROL HILDEBRAND
CW STAFF

BOSTON — Macintosh zealots descending on the Macworld Exposition this week are not apt to find much in the way of breakthrough technological introductions or new applications. Most of the booths are expected to display upgrades and products that were announced months ago but only recently began shipping.

Apple Computer, Inc. is also expected to remain relatively low-key during the event. The company plans to quietly show off Quicktime — its multimedia extension to System 7.0 — to developers in a nearby hotel room rather than on the show floor, for example.

On Wednesday, Apple USA President Robert Puette will share the podium with Computer Associates International, Inc. Senior Vice President of Planning Sanjay Kumar to announce a deal broadening CA's Macintosh support on the corporate database front. CA is expected to dramatically widen Macintosh

functionality on its CA '90s environment, a unifying computer software architecture.

Other products slated to be introduced include the following: ● Caere Corp. will update its page recognition software, Omnipage, with a new version that adds built-in spell checking and draft dot matrix-type recognition programs. Version 3.0 will include expanded support for scanners and will retail for \$695.

The Los Gatos, Calif., firm will also introduce Typist Plus Graphics, a handheld version of the firm's Macintosh scanner that combines optical character recognition with new graphics capabilities. It will sell for \$695.

● Sony Corp. plans to roll out several multimedia products. The Sony Vdeck Hi8 video drive is a dedicated video cassette recorder computer peripheral that provides greater frame accuracy and digital overlay. Also being introduced is the MDP-110 Multi Disc Player, which supports both videodiscs and digital audio compact discs.

● Database junkies will likely look for their fix at the booth of

Oracle Corp., which is announcing shipments of Oracle Card for Macintosh, a database query and applications development tool. Oracle Card enables programmers to build front-end applications for Oracle's client/server systems through the use of a point-and-click interface; it is available for \$299.

On the networking end, Insignia Solutions, Inc. will unveil Softnode for SoftPC, which provides Macintosh users with access to Novell, Inc. personal computer networks. SoftPC is a software application designed to run MS-DOS applications on non-Intel Corp.-based computers. The British company is slated to begin shipping Softnode in September. The product will be priced at \$175, with a 10-seat license available for \$1,150.

Esselte Letraset Ltd. will announce an upgrade to Colorstudio, its color image creation and manipulation software. Colorstudio 1.5 adds many System 7.0 capabilities and includes an improved interface and the capability of working on non-floating-point unit computers.

HP heeds user pleas for new products

Will announce three-way multiprocessor, printer; discounts to woo Apollo division users

BY J. A. SAVAGE
CW STAFF

SAN DIEGO — Hewlett-Packard Co. will attempt to respond this week to insistent user requests for new products and continued support for products the company would rather leave behind. At the annual Interex user group conference, HP is expected to introduce a variety of computers and peripherals as well as detail steep discounts available to Apollo Division users to lure them into moving to HP's 9000 Series 700 line.

New products include a three-way multiprocessor at the top of the company's line, a real-time system, a mainframe-size printer and a redundant array of inexpensive disks storage device.

This is the first year that HP and its Apollo Division user groups have been combined, reflecting the migration of the two companies' product lines over the past year. At the same time, customers continue to move toward open systems, allowing connections across product lines.

In the past, Interex and the

Apollo Domain User Society (ADUS) have let HP officials know when they are unhappy about certain moves the company plans, such as cutting off a product line.

For instance, users of HP's 25-year-old real-time computer line, the HP 1000, did not want support and improvements to wither so, two years ago, HP said it would keep the system and make improvements. This week, HP is slated to announce a follow-on product based on reduced instruction set computing technology.

Three-way version

HP will also introduce a three-way multiprocessor version of its high-end proprietary minicomputer, the current dual-processor Model 980.

The new model should run at about 150 transactions per second, according to Robert Winter, product manager for HP's high-end systems. The Model 980/200 runs at more than 100 trans./sec. Winter would not detail pricing or availability.

Citing the need for large and fast printers to accompany its near-mainframe line of minicom-

puters, HP is expected to announce that it is replacing its 10-year-old HP 2680A, which ran at 45 page/min, with the HP 5000 F100, an LED electrophotographic printer running at 100 page/min with laserlike quality.

"We're selling higher and higher end systems, and people are asking for 100 pages per minute," said Curt Dowdy, product manager for the HP 5000.

The printer also uses the same printer control language as the company's popular Laserjet printers.

The printer is slated to be available for HP's proprietary computers in the first quarter of next year and for its Unix-based machines in the second half of 1992. List price is \$175,000, with a \$15,000 credit for HP 2680 users.

HP will also introduce a storage device not specifically requested by users, a disk array.

According to David James, product line manager for HP storage systems, the device will be priced the same as competitors' nonprotected storage devices but will allow some degree of fault tolerance "for customers that can live with 20 minutes of

not having their data available." The product, which will be detailed in late 1991, will have a 5G-byte capacity.

Recently, users have complained about the upgrade path for the DN 10000, a high-end Apollo workstation, said Douglas Eltoft, president of ADUS. HP had promised increased memory, a new compiler and double the amount of CPU power for the machine, he said.

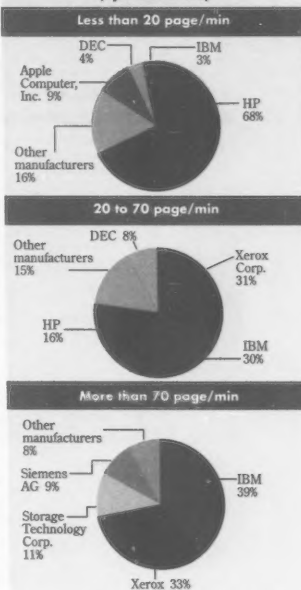
"Some CPU components couldn't be produced in volume," an HP spokesman said. Although HP lost money on its investment in the upgrade program, users who can no longer increase the CPU capacity of their old machines will be given steep discounts to migrate to HP's 9000 Series 750 — the company's top-of-the-line workstation.

According to Eltoft, those dis-

Ambitious words

Hewlett-Packard Co. hopes to tear off a piece of the high-end printer market

U.S. page printer market share (by installations)



Source: Computer Intelligence CW Chart: Janell Genovese

counts are 40% plus ordinary discounts, and users will be able to keep their DN 10000s.

Dual-clock 486SX: Bonanza for Intel?

BY JIM NASH
CW STAFF

Intel Corp. is planning to produce dual-clock microprocessors that could help extend the life of some desktop computers and hold down the cost of new, faster boxes. Not everyone is buying the strategy, however, and many said they see Intel as the chief beneficiary in a market splintered by the new chips.

The Santa Clara, Calif.-based chip maker is designing dual-clock I486SX processors that will churn through massive computations at clock speeds of 66 MHz, for example, while running more mundane functions such as direct memory-access controllers at 33 MHz.

While Intel and most of its major OEM partners refused to

give specifics, widespread reports indicated that the 66-MHz/33-MHz processor will be joined by 50-MHz/25-MHz and 40-MHz/20-MHz dual-clock chips.

At least one of the processors is expected to ship in the first quarter of 1992, according to industry sources.

Evaluation under way

A source at AST Research, Inc., an OEM of Intel products, confirmed that the company recently received an evaluation copy of the 66-MHz/33-MHz chip. With such a chip plugged into the existing upgrade socket of a 33-MHz, I486SX-based personal computer's motherboard, end users would get internal CPU performance at close to 66 MHz without upgrading the mother-

board or other components tied to the motherboard.

Several sources said full 66-MHz performance could not be achieved as long as data arrived at the CPU through a 33-MHz back bus.

"I think most applications today won't run any faster unless other components run faster," said Hilal Al-hilali, senior section manager of the technology integration center at Bank of Boston.

Tom Macdonald, marketing manager for Intel's 80386 and I486 chips, said that under the new architecture, each chip would split external and internal computing duties. Memory cache and bus controllers, like direct memory-access controllers, would be handled at the slower clock speed. Internally, com-

pute-intensive tasks such as rendering, database sorting and large spreadsheet crunching would be run at the higher speed.

For end users, said Tom Thornhill, senior microprocessor analyst at Montgomery Securities in San Francisco, the strategy could slow the update escalator they have ridden with desktop hardware. "The market would like to see a midlife up-

grade option," Thornhill explained.

However, Jeff Goldstein, president of Campbell, Calif.-based box maker Sunnyvale Memories, Inc., predicted that most users would opt for a hybrid system, but he said Intel's ability to market many flavors of chips would make it difficult for competitors to mount a broad-based challenge.

SPA inspects Viasoft's PCs to check piracy accusations

BY JIM NASH
CW STAFF

PHOENIX — Viasoft, Inc., a mainframe applications developer, is under investigation by the Software Publishers Association (SPA) for alleged software piracy. The firm's offices were raided by the SPA two weeks ago, Viasoft's chief executive officer, LeRoy Ellison, confirmed last week.

Ellison said he is unaware of any illegal software copying. "I'm shocked that someone would make such allegations, and I am shocked by the possibility that they are true. We have not permitted illegal copying since I came aboard," said Ellison, who had served as chairman of the private company for sev-

eral years before taking the CEO spot last year. "We want to eliminate any [past] infringements if they occurred."

Six-year-old Viasoft produces several Cobol-based tools and analyzers.

A spokeswoman for the SPA said the association is unable to discuss the case.

Ellison said SPA personnel inspected the 100 or so personal computers on the premises but gave no indication that improprieties had been discovered. Viasoft must now find software sales slips and original vendor disks for the investigation.

Ellison said a former Viasoft manager made the original accusation. The SPA contacted at least one other former employee who corroborated the charge.

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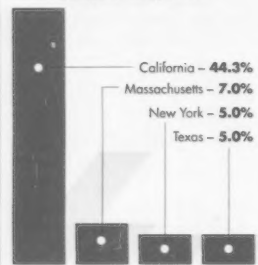
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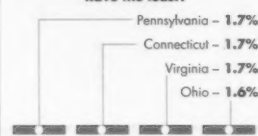
The state of computer companies

Percentage of computer companies in the U.S.

Which states have the most computer companies?



Which states have the least?



Software developers have their day

Massachusetts Governor William Weld declares the week of Sept. 8-15, 1991 as software development week in the state to draw attention to technical achievements and to the field of software development.

For your browsing pleasure

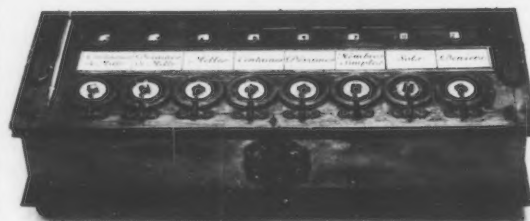
Wayzata Technology, Inc. announced Terrorist Group Profiles, a compact disc/read-only memory disc containing detailed information, statistics and chronologies of some of today's most dangerous organizations, from Europe's "Red Army Faction" to Ecuador's "Alfaro Lives, Damn It!"

TRIVIA TIDBITS

1. Ethernet was named a networking standard in 1980 in a joint public announcement by three computer companies. Which ones?
2. Steve Jobs and Steve Wozniak are best known for developing the Apple computer. But they also teamed up to design an arcade game for the original Atari video game machine. What was the name of the game?
3. Desktop publishing refers to TIFF files. What does TIFF stand for?

1. Intel Corp., Xerox Corp., Digital Equipment Corp.
2. Breakout 3. Tagged Image File Format

HISTORICAL SNAPSHOT



Courtesy of The Computer Museum, Boston

Mathematician Blaise Pascal's "Pascaline," the first workable automatic calculator, was perfected in 1653. Similar to calculators used until a few decades ago, the machine arranged the digits of a number in wheels. When each wheel made a complete revolution, it would in turn shift its neighboring wheel one-tenth of a revolution, totaling each digit counted. On top of the box were windows through which one could view the totals. The machine could only add and subtract.

Letters better left unread

Mr. Tom McConnell
New Products
Computerworld

Dear Tom,
It was a pleasure meeting you at the NBCC USA booth at Comdex this past week... Thank you again, and it's great to see people in person who before were only voices on the phone. — From a letter sent by Dateline Communications.

That's all well and good, but no one by that name works here.

QUIPS & QUOTES

"When big business meets technology, the result is a blunting of the cutting edge." — Laura Cohen, vice president for creative affairs at American Interactive Media.

► Do you have anecdotes about your users, your boss or your job? Know any industry trivia? If so, please contact Lory Zottola or Jodie Naze at (800) 343-6474. If we use your ideas, we'll send you a gift.

Sources: 1991 Computer Industry Almanac; The History of Computing by Marguerite Zientara; Media Age magazine, May 1991; Special thanks to The Computer Museum, Boston

INSIDE LINES

Academic treatise

► The Rochester Institute of Technology should have stuck with its original idea of developing a treatise on Telecommunications Asia:2000. However, the institute got more interested in Japan as a rising economic power and ended up hosting a CIA-sponsored conference on the subject. A report on the conference, leaked to the international press, alleges, among other things, that Japan is basically an amoral society that will stop at almost nothing to gain economic dominance. The institute is still trying to distance itself from that report — and the CIA.

Freedom group open to all

► An intruder hacked into a Next computer at the Electronic Frontier Foundation headquarters last month, according to the latest issue of "Effector," the advocacy group's on-line newsletter. The hacker slipped into the machine through a loophole in the remote execution daemon called rexd and altered files.

Not exactly the corporate image

► Virus-L, an electronic digest of virus-related topics, posted a note last week saying Oracle sent out 800 demo disks for its new Windows' DDE/Toolbox before discovering the disks were infected with the Stoned virus. The company is scrambling to contact

the recipients of the disk by telephone and to send out replacements by overnight mail. The Stoned virus — a.k.a. the Marijuana or New Zealand virus — displays the message, "Your PC is now Stoned." Efforts to contact Oracle were unsuccessful.

Phasers on stun

► Tektronix's wax-based ink-jet printer looked promising, but not to Hewlett-Packard. HP took umbrage at the product's name, Phaser Jet PXI, and filed an injunction against the company, saying the phrase Phaser Jet sounded uncomfortably close to its own Laserjet line of printers. The judge lined up with HP, and Tektronix decided that a new product name was the better part of valor. The printer is now known as the Phaser III.

This VAN is your VAN

► We all know it was user pressure that forced the major electronic mail services to interconnect with one another via X.400 — but now we hear that some providers are actually slowing down delivery of electronic data interchange documents when such delivery involves a rival service. The idea, we are told, is to make these exchanges so costly that their customers will start pressuring business partners to move to the same value-added network that they are on.

Pull back the curtain

► An IBM source tells us that the latest revision of the OS/2 betas, just now walking out the door to a se-

lect group of testers, not only can run Windows 3.0 in Standard Mode, but also features Dynamic Data Exchange support. Meanwhile, if you want a first look at IBM's Workplace Shell running under OS/2 2.0, catch the keynote address at the Windows and OS/2 conference in Boston next week.

Extensions' extension

► People waiting for Microsoft's Multimedia Extensions for Windows will not have to do so for much longer, a Microsoft spokesman said. The product, slated for release at the end of last month, is in final testing and should be available within a week. The release will be the end of a two-year development effort.

D&B reaches out

► In its quest to produce relational PC-based client/server computing products, Dun & Bradstreet Software may form an alliance with Sybase to obtain another piece of the technology puzzle. D&B says the first component of the Windows-based client/server products will be out by the end of the year.

Executive Editor Paul Gillin will be on call in this corner, drumming up tips, tidbits and other good info as News Editor Pete Bartolik spreads his sheets and sails off to Cambridge, Mass., to take up residence at Lotus Magazine, an affiliated IDG publication. So keep this column thriving by calling (800) 343-6474, transmitting a fax to (508) 875-8931 or communicating via our Compuserve address, 76537,2413.

Companies Grow. Technologies Change. Networks Fail.

Building a facility network requires many decisions. And none is more critical to the network's success than your choice of smart hubs.

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Flexibility. Your facility network must be able to handle today's technology, like Ethernet

and Token Ring, yet be open to tomorrow's, such as FDDI. The ONline System Concentrator's modular design makes it easy. And its TriChannel™ architecture means each hub can run up to three concurrent networks—Ethernet, Token Ring or FDDI—in any combination, without additional backplanes.

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The real cost of networking. The good news is that this reliability, flexibility and manageability can actually cost your company less. To find out how, and for more information on Chipcom's ONline System Concentrator, call **1-800-228-9930**.

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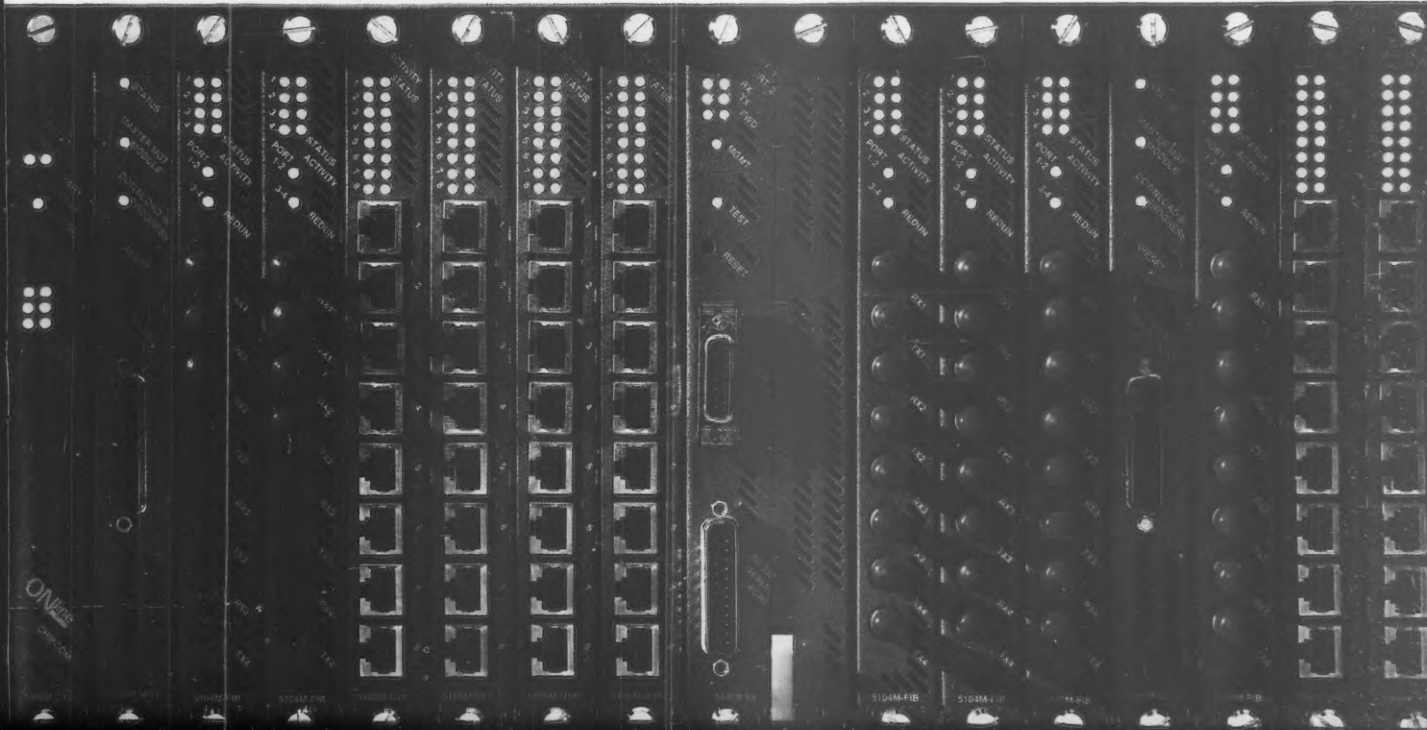


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NEW

Borland ranked best Quattro Pro beats Lotus 1-2-3

Two recent industry studies objectively confirm the facts: Customers rank Borland best among software companies, and Quattro® Pro outperforms *all* Lotus® spreadsheets.

Borland: The technology leader.

Buying software shouldn't be an act of blind faith. Before purchasing your next spreadsheet, take a hard look at the company behind it. Bigger is not better!

Because Borland is smaller than our competitor, we work smarter, we try harder, and it's paying off: Borland was just ranked "Best Application Software in Customer Satisfaction, in Small and Medium Sized Businesses," in the prestigious J.D. Power and Associates survey.

Who would you rather buy your next spreadsheet from?

J.D. POWER AND ASSOCIATES

APPLICATION SOFTWARE
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June 6, 1991

1. BORLAND

2. WORD PERFECT

3. CLARIS

4. ALDUS

5. MICROSOFT

6. LOTUS

Quattro Pro: The standard of excellence.

InfoWorld reviews confirm what more than one million PC users already know: Quattro Pro is the best DOS spreadsheet that money can buy. Better than *any* Lotus spreadsheet including their recently released version 2.3.

Just check out the *InfoWorld* review results below. Quattro Pro wins in comparison to Lotus 1-2-3® hands down in *InfoWorld* and with more than 1,000,000 enthusiastic users.

	Quattro Pro	Lotus 1-2-3	
Number of ...	3.0 ¹	v. 2.3 ²	v. 3.1 ³
"Excellent"	7	2	3
"Very Good"	8	4	5
"Good"	0	5	4
"Satisfactory"	2	5	3
"Poor"	0	1	1
Overall score	8.4	6.3	6.5

¹ Source: *InfoWorld*, April 29, 1991. ² Source: *InfoWorld*, June 10, 1991.
³ Source: *InfoWorld*, January 28, 1991

REPORT CARD		INFO WORLD
SPREADSHEET SOFTWARE Quattro Pro VERSION 3.0		
Criterion	(Weighting)	Score
Performance		
Formulas/analysis	(100)	Very Good
Compatibility	(50)	Very Good
Speed	(75)	Very Good
Database	(75)	Excellent
Graphics	(75)	Excellent
Output	(50)	Excellent
Macros	(50)	Very Good
Consolidation/linking	(50)	Excellent
Capacity	(50)	Very Good
Network	(50)	Satisfactory
Documentation	(50)	Excellent
Ease of learning	(50)	Excellent
Ease of use	(75)	Very Good
Error handling	(50)	Very Good
Support		
Support policies	(25)	Very Good
Technical support	(25)	Satisfactory
Value	(100)	Excellent
Final score		8.4

We don't blame Lotus for trying to underplay ratings such as these, but clearly Quattro Pro is more powerful. It has better graphics, better capacity, better macros, better consolidation and linking, and much more!

Borland and Quattro Pro: The obvious choice.

Company for company, product for product, the choice is clear. Join more than a million users and upgrade to Borland's Quattro Pro today! If you own any version of Lotus 1-2-3, for only \$129⁹⁵ we'll rush you your own copy of the best spreadsheet from the best company.

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